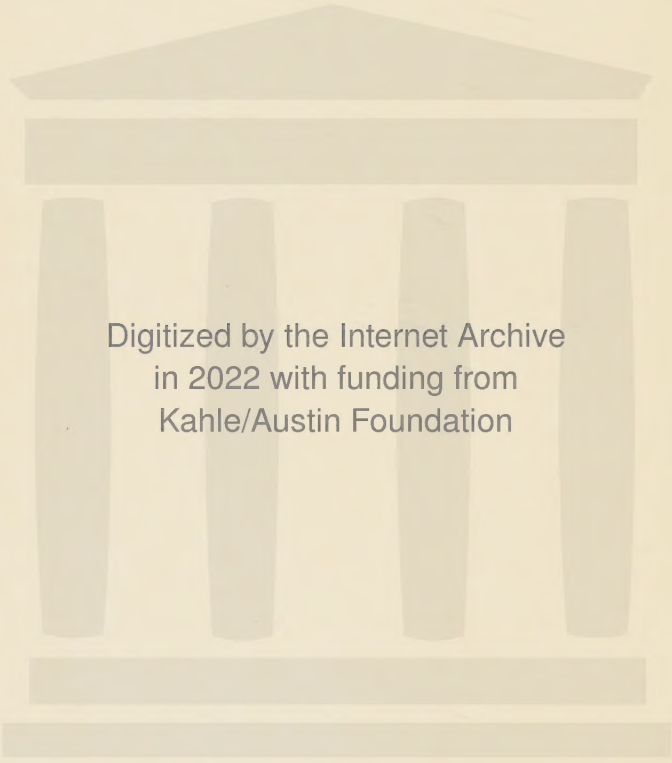
PUBLIC HEALTH ORGANIZATION IN THE CHICAGO REGION

Steadman

Social Science Studies



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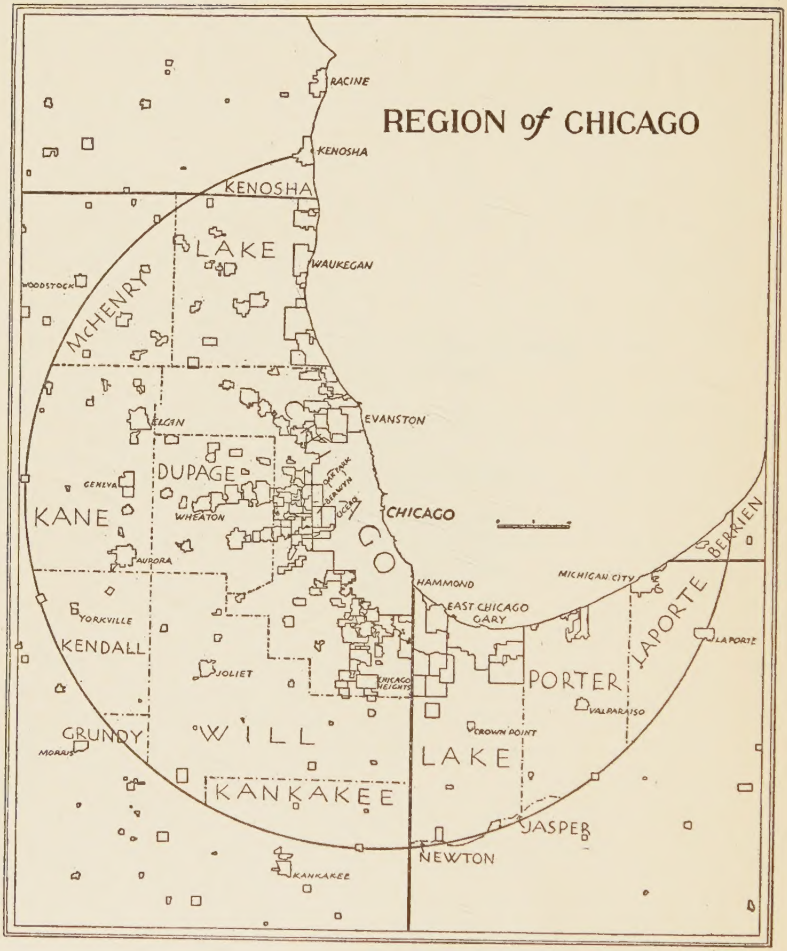
REGION of CHICAGO
RACINE
KENOSHA
KENOSHA
LAKE
WAUKEGAN
WOODSTOCK
McHENRY
ELGIN
EVANSTON
DUPAGE
GENEVA
KANE
WHEATON
AURORA
CHICAGO
COOK
HAMMOND
EAST CHICAGO
GARY
MICHIGAN CITY
BERRIEN
LAPORTE
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PUBLIC HEALTH ORGANIZATION IN THE CHICAGO REGION

By

ROBERT F. STEADMAN

Syracuse University

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TO

MY MOTHER AND FATHER

PREFACE

The metropolitan Region of Chicago with its eighteen hundred independent taxing and rule-making bodies is perhaps the most confused jungle of political agencies anywhere to be found. It offers a sharp challenge to the analyzing ability of the student of government and to his constructive faculties as well.

The Social Science Research Committee of the University of Chicago has undertaken a series of inquiries in the metropolitan Region, designed to illuminate the essential relations in the area, and to provide a basis for the amelioration of the situation. Among these studies are Goode's *Geographic Background of Chicago*, Fryxell's *Physiography of the Region of Chicago*, and Jeter's *Trends of Population in the Region of Chicago*. Some of the important trends of economic development have also been studied. Duddy's *Agriculture in the Chicago Region* and Marshall and Magee's *Manufacturing in the Chicago Region* are important in this connection.

A preliminary survey of the governments of the Chicago Region has been completed and will outline the eighteen hundred local governing bodies representing the public in this community. A companion study of the personnel of regional governments accompanies this. Following this, the functional approach to the problem involves the examination of the governmental activities of the Region in the field of health, of education, of public welfare,[1] of police, of the courts, of public finances, all of which are nearing completion, and of other

[1] S. P. Breckinridge, *Family Welfare Work in a Metropolitan Community.*

studies in recreation, transportation, public works, public utilities, and possibly other phases of the metropolitan political process. Finally, a constructive program of governmental organization for the district or at any rate alternative possibilities will be developed and presented. It is hoped that the research in this field will be useful to the Chicago community in organizing the political and social planning essential to intelligent governmental and social organization and control in this large area, thrown together in such an unusual manner.

Dr. Steadman's study of public health in the Chicago Region is one of the first of the functional studies to appear—a novel enterprise in more ways than one. Much of the material was collected by the slow process of interviews with health workers scattered throughout the Region; some of it by the study of statutes; some of it by study of important aspects of public health work and consultation with recognized authorities in this field. It was necessary to bring together the points of view of the physician, the lawyer, the public administrator, the sociologist—but, after all, this is what government is doing every day, and this type of synthesis is in no sense alien to the political scientist.

By bringing together the scattered parts of the public health picture, it is possible to provide a point of view from which co-operation, co-ordination, and reconstruction in this admittedly important aspect of human life and comfort may be more readily attained.

Charles E. Merriam

FOREWORD

This study was begun with much trepidation and its publication is accompanied by many qualms. Doubtless the lack of formal training has led to errors in the field of medicine, in addition to the sins of omission and commission inevitable in so large a task. Yet, and despite the vast amount of work being done in the field of public health by qualified physicians, I believe firmly that the work involved in this new primary approach—from the viewpoint of the student of government—is fully justified by the facts revealed.

Some statements contained in the text may be inaccurate as applied to the present time, because most of the material was collected in 1927–28 and where assertions are made without qualification they refer to conditions of those years. Nevertheless, regardless of specific cases, the general results of the study apply with equal or greater force to the 1930 situation, for reasons suggested in the body of the text.

I am deeply indebted to the many persons who gave generously of time and thought to the study. Professor Charles E. Merriam first inspired the project, his breadth of vision lent perspective, and his advice and kindness made possible its fruition. Dr. I. S. Falk read the original manuscript and gave invaluable aid and advice throughout the preparation of the study. Appreciation is also due to Professor Leonard D. White, and to Professors Carroll H. Wooddy, Herman C. Beyle, Rodney L. Mott, and Harold F. Gosnell for suggestions and criticisms they have made. Health officers and

workers of the Region of Chicago and of the various state departments were in the main eager to offer every courtesy in their power. Finally, I wish to express my thanks to my wife, Calista Lewis Steadman, who toiled long hours on the manuscript; and to Mr. Spencer D. Parratt, the author's co-worker in the problems of regional government in the Chicago area, whose encouragement, stimulation, and helpful co-operation meant much to the study. These people have wrought much of what is good in this volume. For its shortcomings I alone stand responsible.

ROBERT F. STEADMAN

SYRACUSE, N.Y.
October 13, 1930

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CHAPTER I

PROBLEM AND METHODS

I. THE PROBLEM

This study deals with five million people and the means used by governments to protect their health. The people live in the Region of Chicago, an area extending fifty miles in every direction from the intersection of State and Madison streets. One hundred years ago this area was an almost uninhabited waste; today it is the third urban center of the world. Modern methods of transportation and communication have permitted this phenomenal massing of population, and have created a social and economic unity within the regional community. Of course, the fifty-mile circle is only an approximation—the real boundary of the metropolitan unit lies sometimes within and sometimes beyond it; but by and large the people within it read the same newspapers, are involved in the same economic system, share attitudes and interests.

This social, economic, and intellectual unity is not reflected in the system of governments which rule over these people. There are over seventeen hundred separate governments of more than thirty distinct types which levy taxes on some portion of the Region of Chicago. Their powers and functions are so jumbled together that no student of government has yet satisfied himself that he has solved the labyrinthine maze in more than an elementary way; the variety and multiplicity of jurisdictions confuse the understanding and

quite defy description. Yet the sovereign citizen at the same time may be subject to ten or more of these governments, making intelligent control on his part impossible. Intricacy, complexity, and chaos mark the tangled skein of local government in this area.

This confusion seriously affects practically every activity and interest of every citizen and subject within the area; and, to go straight to the heart of our problem, it has a profound effect upon the health of the inhabitants. Governmental control has always been an important factor in health protection, but with modern discoveries in medicine the field of community responsibility has been greatly increased, both in self-protection of the group against ignorant and antisocial members afflicted with communicable diseases and in the use of common resources in preventive effort. The aim of this study is to portray the public health activities of the Region of Chicago; to determine what types of government are most alert, what classes are least effective, which agencies might profitably be abolished, what variations of efficiency occur within each type, where there are possibilities of co-ordination, and to what extent amalgamation would be feasible from the viewpoint of public health.

II. APPROACH

Having stated our problem, it is obvious that the method of attack traditional among political "scientists" could not be used. The results of government rather than its mechanisms are here involved. We are less interested in statutes and the theoretical forms and prescriptions of government they set up than we are in death-rates and the practical results of government that

they reveal. We are concerned with the problem of the individual whose health is protected by many governments of varying functions and degrees of success, and not with the study of any one government or type of government.

This is the "functional" approach to government in a much broader sense than is usually connoted by the term. There is no question here of legislatures, or of executives, or of judges, or of administrative organization, of various governments and their comparison. Rather we approach the problem from the standpoint of the human being whose life may be lengthened or shortened by the sum total of governmental health activities. Consider the low ebb of local governmental practice. Would not the average citizen exercise his franchise as a privilege rather than a duty if he knew the magnitude of the issues at stake and their close relation to his interests? Our approach seeks to bring politics back from the realm of theory and dull mechanics to the land of realism and vital fact.

Certain it is that the study of any one type of government operating in the area could not well produce a complete or true picture. The traditional approach has been limited to the study of the activities of the federal government, or of state governments, or of municipal governments, or, more rarely, of county or township governments separately. Even were this extended to include all types of these governments in the Chicago Region, and sanitary districts, park districts, forest preserve districts, library districts, public health districts, tuberculosis sanitarium districts, and mosquito abatement districts as well, the whole series of studies might not reveal at all clearly just which governmental

agency, if any, was responsible because Citizen Jones succumbed to tuberculosis in the thirtieth year of what promised to be a useful life. And it is unlikely that all of these studies combined would produce any very constructive plan for reorganization of our local governments.

It is for this reason that the chapter headings of this volume fall on public health lines—vital statistics, contagion, tuberculosis, venereal diseases, infant, maternity, preschool and school hygiene, milk and food supplies, water and sewage—rather than on traditional governmental lines, as legislative, executive, judicial, administrative, electoral, or, worst of all, on types of governmental units, as federal, state, county, township, city, village, and special districts. Nevertheless, this is primarily a study of governments rather than of public health. We are interested in public health only as it reveals the operations of governments. Governments cannot properly be studied in a vacuum; they are significant only in their successes or failures. The ways in which, the efficiency with which they protect our property, our persons, our health—the opportunity they afford us to secure our individual desires—these are of supreme interest and importance.

The study of public health, however incidental, is stimulating to the student of government because the rapid advance of medical science over the last fifty years contrasts so vividly with the static nature of government over the same period. In the Chicago Region counties and townships have not suffered fundamental statutory alteration even as to boundaries, despite the astounding urbanization that places new and different burdens on local government. Illinois cities and villages still oper-

ate under the Act of 1872, essentially unchanged. Devised to fill the needs of times long past, whole types of government are obsolescent. Joining hands in an almost unbroken circle about Chicago are over one hundred satellite municipalities choking the expansion of the towering neighbor whose wealth they share. The state legislatures realize the inadequacy of this traditional machinery when faced with modern problems, but have merely added to the confusion by permitting the establishment of numerous special and independent governing agencies, such as sanitary districts and tuberculosis sanitarium districts and public health districts, with what results the body of this study will reveal. The results of recent medical research are widely accepted and applied, but it may be that a radical reorganization of local government is necessary before the fullest use of these discoveries will be possible. We must try not to let existing governmental forms obscure our vision as we seek ideal means of metropolitan health protection through governmental action.

III. METHODS AND MATERIALS

Our approach has made this analysis more difficult. To describe a unit of government, to enumerate officers and functions and powers is easy; to learn details of operation of the hundreds of governments at work in the Region, to evaluate their public health efforts, is relatively hard. To accomplish our end three preliminary and three primary studies were made.

The first of the preliminary studies centered about the concept of the metropolitan area, with special reference to the Chicago Region. This study of the physical characteristics of the area, distribution of population within

it, and its industrial and commercial background was prerequisite to any understanding of the problem of health control within it. While the legal boundaries of Chicago include about two hundred square miles and three million people, the "natural" city, the metropolis, now clearly extends over a much broader area. It practically covers five counties in two states, and the metropolitan influence is already felt throughout ten other counties and in two additional states. As we have defined it, the Region of Chicago contains over fifty-eight hundred square miles of land area. Half as many people live outside the artificial city boundary as within it, and the outer population is increasing at a much more rapid percentage rate.

The second preliminary study involved partial familiarization, at least, with technical aspects of public health work as ideally practiced under modern conditions, and an attempt to understand the fundamentals of correct public health procedure. The third step involved study of the statutory provisions concerning health enacted by the four states concerned in the study —Illinois, Indiana, Wisconsin, and Michigan. To do this it was necessary to master at least superficially the appalling intricacies of legal structure of the thirty-five separate types of government interested in the Region's health. This was done with special care for the 200-odd municipalities, the 125 townships, the 5 counties, and the various *ad hoc* districts most closely involved. None of these three preliminary methods was used in more than an introductory sense, and statutes will be used and quoted throughout only in the light of observed practice, or to show legislative attitudes.

The least important of the three primary methods

was the reading and study of available printed materials relating to actual health work of governments in the Region of Chicago. A great mass of such material was at hand, but much of it proved of little value for our purposes. Very frequent reference will be made to statements contained therein, however, as they constitute a constant check upon the other two primary methods employed—field investigations and statistical analysis.

To obtain information concerning actual field operations well over one hundred interviews were had with health workers throughout the Region. All of the larger and samples of the smaller municipalities and special districts were visited and the information gained was supplemented by several hundred replies to letter inquiries. To secure some degree of uniformity in the materials obtained, for purposes of comparability, a schedule of specific public health information was drawn up, adapted from the survey forms which have attained such wide use lately in the rating of effectiveness of public health programs throughout the country. The factual material requested of health officers throughout the Region was not sought merely as an end in itself, but because the facts requested frequently called for collateral remarks and justifications by the officials interviewed which often proved most illuminating. It was hoped that the profusion and confusion of health statutes in force might be somewhat mitigated by voluntary personal co-operation between officials, and the method of personal investigation was used as a check on this point, with results that appear in succeeding chapters. The method proved on the whole far more satisfactory than any amount of statute perusal, correspondence, or intellectual abstraction.

Finally, statistical materials were used extensively, as a further check upon results obtained through other means. Despite their limitations, figures are impartial and conclusions based upon them should be more worthy of trust than those backed only by sampling or casual inspection. Did not our statistical analysis verify our general deductions in impressive fashion, those deductions would rest upon much more debatable ground. Conclusions supported by series after series of facts can be attacked only by showing that the basic data itself is false.

While much reliance is placed upon statistical materials, the number of tables appearing in this study has been sharply reduced in the interest of readability. The key figures, the most important facts, are still included, however, and may be verified by reference to the sources from which the original gross data were obtained. Most of the statistical statements made involved long and tedious computations, but it is not thought necessary to require the reader to follow the same laborious paths. Therefore the results obtained are set forth, in many cases, without the primary supporting materials.

Before plunging into the actual work of the seventeen hundred governments of the Region of Chicago it might be wise to introduce the most important of them to the reader, class by class. Therefore the regional public health army stands arrayed in three main groups: the general staff, the rank and file, and the auxiliary arms. The general staff, naturally enough, directs, supervises, oversees; the rank and file execute commands of the foregoing at times, albeit somewhat fumblingly; and the auxiliary arms are the pioneers that scout ahead along the public health frontier.

CHAPTER II

THE GOVERNMENTS AT WORK

More than seventeen hundred local governments are at work within the Region of Chicago, and over thirty types are involved in the administration of public health. Some governments have merely a casual interest in health, but others have as many as forty separate departments, bureaus, divisions, and services with a more or less vital interest in this field. Effective co-ordination is rarely found among them. Even excluding governments of secondary importance to public health, there are well over one thousand governmental agencies participating in the Region's health program. The various governments have been classified in four groups in this chapter, for convenience.

There are 101 governmental agencies with supervisory jurisdiction, including the United States Public Health Service, 4 state health departments, 2 county health departments, besides 39 other federal and 55 other state agencies either primarily or secondarily interested in public health administration. There are 326 separate governments that provide direct health protection, as follows: 41 cities (31 in Illinois, 9 in Indiana, 1 in Wisconsin); 21 towns (20 in Indiana, 1 in Illinois); 140 villages (139 in Illinois, 1 in Michigan); 119 townships (113 in Illinois, 3 in Michigan, 3 in Wisconsin); 5 counties (all in Indiana). Besides all these, there are 17 *ad hoc* governments created solely to meet the needs of health and sanitation, including 11 sanitary districts,

4 county and 1 municipal tuberculosis sanitarium districts, and 1 public health district. Finally, besides these 444 agencies, there are nearly 1,000 school districts, some 60 park districts, 4 forest preserve districts, some 70 library districts, over 150 drainage districts, and 3 mosquito abatement districts with some incidental health functions.

In contrast with this inordinate number of agencies at work in the Region is the number of persons who devote full time or some considerable part of their time in regional health work. Exclusive of federal and state agents, who are not numerous in the Region, there were in 1928 only 1,304 persons employed full-time in direct health work, and of these 1,122 were employed by Chicago, 103 by other municipalities, 35 by the Sanitary District of Chicago, 35 by the various counties, 8 by the Berwyn Public Health District, and 1 by the townships. These figures do not include the physicians employed by some townships to care for the poor, as that is primarily a charitable and not a public health activity; nor do they include the employees of the Chicago Municipal Tuberculosis Sanitarium, who averaged 948 during the year, nor the employees of the four county tuberculosis sanitariums, to the number of about 200. Thus well over 80 per cent of the 2,450 full-time employees are under the Chicago Health Department or the Chicago Tuberculosis Sanitarium.

An opposite situation appears when we compare the 15 part-time employees of the Chicago Health Department with the 94 employed by other municipal health departments, 6 employed by townships, 9 employed by counties, 32 employed by the Sanitary District, and 1 by the Public Health District. Here Chicago has less

than 10 per cent of the total; and this fact suggests a major difference between the type of health administration in Chicago and that in suburban and "rural" areas —the difference between the work of professionals, technicians, and work by physicians whose interests in public health are frequently casual. As a matter of fact, the township supervisors are not included in these 157 part-time employees, although they are health officers in those areas; nor are all of the health officers of small municipalities included, because many of them do not operate under any regular salary provisions.

I. GOVERNMENTS WITH SUPERVISORY JURISDICTION

Included here are the federal government and four state and two county governments. Most of their health activities are stimulative in nature, although they do put forth direct effort in some fields. In their supervisory capacity they co-ordinate and direct the work of the smaller governments; they offer professional advice and furnish skilled technicians. Theoretically, at least, that is their function, although actually some of them fall far short of the ideal.

The United States Public Health Service (Department of the Treasury) is the principal federal health agency. It spends about ten million dollars annually, but only a small part of this expenditure occurs within the Chicago Region. In many respects its activities are concentrated on the borders of the country, and consequently the effect on inland areas is indirect although important. But in addition to this service there are 6 other federal agencies with a primary public health interest, 7 with an important although secondary interest, 8 additional bodies that offer medical relief or do

health work of restricted or special scope, to say nothing of 18 others with a merely incidental interest in this field.[1]

The primary health function of the federal government is to stimulate, to direct, and to encourage local authorities. Its food and drug control, quarantine service, and other direct health activities are instances where it leaves its usual rôle. More in line with the central purpose are the grants-in-aid of maternity and infancy welfare and of anti-venereal disease clinics. Less dramatic but of great importance have been the fruitful efforts to improve local registration of births and deaths through methods of friendly persuasion. The states have followed the lead of the federal government time and again—in inspection of meats, in popular health education, in the competitive scoring of local health departments. Other illustrations of this type of work are the field demonstrations dealing with diseases locally prevalent, financial and personnel assistance in local emergencies, and advice concerning specific sanitation problems. The psychological as well as the practical effect of federal alertness must be noted.[2]

This is a study of administrative areas, so we shall call attention to a rather important fact before leaving the

[1] The Bureau of Chemistry and the Bureau of Animal Industry (Agriculture), the Medical Division and the Division of School Hygiene (Interior), the Children's Bureau (Labor), and the Division of Vital Statistics (Commerce) are the six agencies most vitally interested in public health. Federal agencies other than the Public Health Service spend $7,000,000 for public health annually. Additional expenditures for medical relief and sanitation total $115,000,000 per year. See James A. Tobey, *The National Government and Public Health* (Baltimore: Johns Hopkins Press, 1926), esp. chap. xv.

[2] Another recent and comprehensive volume covering federal health activities, in addition to that of Mr. Tobey above mentioned, is that of Robert D. Leigh, *Federal Health Administration in the United States* (New York and London: Harper & Bros., 1927). The necessity for better co-ordination of federal health work is generally accepted.

federal government. Federal health activities in the Chicago Region are not directed from Washington. United States Public Health District No. 3, including twelve midwestern states, and Interstate Sanitary District No. 3, including ten states, both have their headquarters in Chicago. The establishment of these districts is in itself recognition that Chicago is a natural center for health administration.

Nevertheless, most of the supervision over local health authorities in the Chicago Region is directed from four state capitals. The Chicago Region is divided among four independent nations in all phases of government not controlled by the federal union. Four sets of state law are in force, and four sets of state health rules and court decisions apply. Even more fundamental is the fact that each state has created its peculiar hierarchy of local governments.

The state health departments perform functions similar to those of the federal government. They stimulate and encourage local authorities, just as the federal government has, in turn, quickened them. Sometimes they simply pass on stimuli they themselves have received from above. There is one difference, however. The state department may use absolute coercion, while the federal agencies usually lack this power. Of course, the states operate in a much smaller area and give more attention to detail.

The health activities of the four states are quite similar, though they vary widely in degree of intensity and method of execution. They include collection and interpretation of vital statistics gathered by local agencies, co-operation with federal and local authorities in the eradication of bovine tuberculosis, exercise of complete

control in cases of local emergency, provision of expert advice to municipalities concerning water supplies and sewage-disposal systems, research into problems of state-wide importance, encouragement of local hygiene programs, maintenance of state laboratories, support of state hospitals, enforcement of state laws and administrative rules, special campaigns against venereal diseases, assistance to local authorities in popular health education, direct control over food and dairy products, and miscellaneous other activities looking toward more complete co-ordination of local efforts. While these activities are common to all the states, the exact balance between authority retained by the state and that delegated to subordinate divisions varies.

In Illinois the primary health functions are concentrated in a Department of Public Health, under the administrative code of 1917. The director of public health, appointed by the governor, selects all but two of his subordinates under the state civil service provisions. The assistant director and the superintendent of lodging house inspection are appointed by the governor, under special statute. But the usual state health activities are under the immediate supervision and control of the director.[1]

In addition to the State Health Department, however, there are eight state agencies with important health duties.[2] Few persons would urge that all health

[1] The nine divisions are as follows: Communicable Diseases; Special Hygiene; Tuberculosis; Laboratories; Engineering and Sanitation; Child Hygiene and Public Health Nursing; Vital Statistics; Public Health Instruction; and Lodging House Inspection.

[2] These are the Division of Registration, State Water Survey, Division of Foods and Dairies, Food Standard Commission, Department of Labor, Department of Mines and Minerals, Department of Public Welfare, and the Rivers and Lakes Commission. The health significance of each of these

functions performed by these bodies should be placed under the regular Health Department. They are merely cited to show the difficulties in the way of complete co-ordination of health activities, at the best.

Obviously, the state of Illinois should occupy a large place in the health program of the Chicago Region. In 1920 over 52 per cent of the total state population was clustered within fifty miles of the State-Madison intersection, and far more than half of the state revenues come from the Region. Hence, one would expect that about $300,000 of the state's $594,000 appropriation for the Health Department for 1929 would be spent within the Region. Especially should this be true because the most rapid population growth, and consequently the most acute health problem, is within the Chicago area.[1] But actually only a small portion of this money is spent in Chicago or its environs.

The Region of Chicago receives even less attention from Indianapolis than from Springfield, even taking into account population distribution. While only about 7.5 per cent of the Indiana population were included within the fifty-mile radius in 1920, it is expected that in 1930 12 per cent of the estimated total, or 380,000 Indiana citizens, will be found within our magic circle. Despite this phenomenal urban development, however, the Indiana State Board of Health allows the local authorities to meet most of their problems unassisted. None of the members lives in the Region.

The organization of the Indiana Health Department

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should be clear, with the possible exceptions of the first, which examines practitioners in professions affecting the public health; and the Department of Mines, which deals with conditions affecting the health of the miners.

[1] On the basis of reliable estimates the Illinois regional population will be 4,245,000 in 1930, or nearly 58 per cent of the state total.

is very hazy. The secretary of the State Board of Health is the chief executive, and under him are two departments, five divisions, and three officers of doubtful rank.[1] The lines of responsibility are frequently vague and indistinct, and one officer may be subordinate to another in one capacity and co-ordinate with him in another capacity. There is considerable overlapping of function, with several agencies doing identical work. The set-up of the various state health departments is not of major interest in this study, but failure to reorganize the Indiana state government has had direct effect on health in the Chicago Region. Moreover, the appropriation for public health is inadequate—only $180,500 for the year 1929.

A similar degree of disorganization exists among the numerous other state agencies interested in public health problems. There are 7 state boards for examining physicians, dentists, nurses, and the like. Fourteen other state bodies exercise health functions, most of them being required by statute to co-operate with the State Board of Health in health matters. In all, there are 22 state agencies involved in health work, and of these 18 are wholly independent of one another. Thus Indiana's mad scramble makes Illinois' health organization appear simple in comparison. Perhaps the health of regional Indiana would be better guarded if administrative supervision were located close at hand, in Chicago, where local problems are more fully understood.

[1] The divisions are Infant and Child Hygiene, Communicable Diseases, Vital Statistics, Housing and Sanitation, and School Hygiene. The epidemiologist and the director of visual education are under the Executive Department. The Department of Public Health Nursing has a close but undeterminable relation to the Division of Infant and Child Hygiene. Also within this Department are the sanitary engineer, the director of the Laboratory of Hygiene, and the state food and drug commissioner.

In 1920 there were some 43,000 inhabitants of regional Wisconsin. While they constituted only 1.64 per cent of the state's population, that part of Wisconsin contained in the Region, like regional Illinois and regional Indiana, is gaining population much more rapidly than the remainder of the state. While there is a State Board of Health as in Indiana, the organization of health work in general much more closely resembles that in Illinois.

There are eight bureaus and four divisions in the central department. There are several branch laboratories, one of which is located within the Region. One member of the State Board of Health resides within the Region, also, and the state is divided into five districts with a deputy health officer in charge of each so as to prevent inequitable distribution of state activity. The 1929 appropriation is $164,000. There are thirteen bodies with health duties, besides the Health Department.

Regional Michigan is insignificant in comparison with the remainder of the state, only 1,245 persons being included in 1920. Still, it is interesting to compare health practice there with that of the other states. There is a commissioner of health, in whose department there are nine bureaus, and who has charge of an expenditure of about $375,000 this year. The number of separate agencies with related functions is fourteen.

There are, then, fifty-five state boards, bureaus, commissions, divisions, departments, and services with important related functions, in addition to the four central health departments. We have reviewed this situation for two reasons: First, we want the reader to have a clear picture of the disorganized condition of regional health supervision at present. To do this we have merely presented the broad outlines, and have not mentioned

the scores of complicated or "freak" statutory health provisions in force in the four states. In the second place, we believe it worthy of special emphasis that much of the $1,314,000 spent by the four state departments is collected from the Region, while little is spent in it.

Two Illinois counties in the Region have established health departments which exercise supervisory functions. The Indiana county health departments do not supervise smaller units; they act directly. Michigan and Wisconsin statutes permit creation of county health departments with supervisory powers, but neither Berrien nor Kenosha County has done so. Illinois has not enacted enabling legislation, but Cook and Du Page counties have simply established health departments without special authorization.

The Cook County department has taken over some of the work of the township health officers, and accomplishes some supervisory work as well. The health director is in contact with city and village health officers in the smaller municipalities and assists them in various ways, although this work might profitably be extended much farther. The department's sanitary engineer has absorbed most of the functions previously performed by the state sanitary engineers in Cook County. His work includes advice and assistance to the municipalities in sanitary matters. The numerous clinics maintained by the department should be classed under direct health activities, but they frequently stimulate local officials to establish similar services.

It should be noted that this department does nothing whatever in Chicago, although about 80 per cent of the

money it spends is obtained from Chicago taxpayers. Chicago bears most of the cost, and receives the merely incidental benefit of lessened disease upon its borders.

In Du Page County the supervisory function is relatively more important than in Cook. In addition, the director has taken over most of the work formerly done by the township supervisors, but much of his time is spent in driving about the county conferring with local health officers, arranging for clinics to be held with their co-operation, and solving problems peculiar to each locality—a type of service which might well be extended throughout the Region. The state departments are so far away that their supervision is more a matter of theory than of fact.

Summing up the supervisory agencies at work in the Region, there are, then, the United States Public Health Service, 4 state health departments, 2 county health departments, and at least 94 other state and federal agencies—in all, 101. But many of them function poorly or not at all, and only the federal agencies have jurisdiction over the whole Region, whereas the Region is a unit in interests and attitudes, in its social and economic life. The 4 separate state health departments administer 4 distinct and different health codes within the regional unit. The feasibility of directing central health functions throughout the Region from Chicago was shown when the Illinois Health Department established administrative quarters in the Loop, just as the Public Health Service has done. If less money were taken from the Region to support supervisory agencies that do their supervising elsewhere, more funds would be available for much-needed local health work.

II. THE DIRECT HEALTH AGENCIES

These are the cities, towns, villages, townships, and counties. They are numerous in variety and myriad in number; they differ in characteristics and functions from state to state. If the seven supervisory governments described above were termed "the staff," these direct health agencies would correspond to the rank and file. In theory they carry out the commands of their superiors. Actually, the state departments in most respects leave the local authorities to their own devices; while they have coercive power they rarely exercise it. They choose rather to shift responsibility on to the local governments.

These, then, are the main governmental buttresses against the armies of disease. Whether or not "G. H. Q." has deployed them to best advantage, equipped them with the best possible weapons and advice, created confidence and morale through efficient leadership, these "privates" on the firing line must bear the brunt of the enemy attack. Upon their effectiveness the final outcome depends. It is well, then, to enumerate and describe very briefly these members of our public health army before we turn to our functional analysis and observe them in the heat of conflict.

The forty-one regional cities constitute by far the most important governmental health factor. Like other local governments, they gather vital statistics, combat communicable diseases, and so on, but they spend more and accomplish more than any other type.

Of course, Chicago, with two-thirds of the regional population, is in a class by itself. Its 1928 budget contemplated a Health Department expenditure of $2,411,000, not including the enormous outlays by the Munici-

pal Tuberculosis Sanitarium and the Sanitary District. The Health Department salary schedule provided for 956 employees to care for all the functions performed by a great city health organization—general administration, control of contagion, social hygiene, infant welfare, school health, vital statistics, inspection and nursing service, laboratories, hospitals, protection of the water supply, and research activity.

There are 30 other Illinois cities in the Region, ranging in population from Aurora with 50,000 to McHenry with about 1,000. Each city council appoints a Board of Health and is broadly authorized to do all acts and make all regulations necessary or expedient for the promotion of health or the suppression of disease. But data we obtained covering 21 of these 30 cities revealed the fact that, taking the Tuberculosis Sanitarium into account, Chicago's per capita health expense was more than twice that of any other of these cities. Actually, it quadrupled the expenditures of all but 4 other cities, and was more than eight times as great as 13 of the 21. Of the 21 cities the larger cities reported the larger per capita costs.

Each city has an executive health officer, but, again, the widest variation exists. Chicago pays its commissioner $10,000, but of the other 24 cities for which information is available, only 7 pay as high as $1,000. More than half of them pay less than $250 annually. We need not be surprised, then, if health conditions in these cities are sometimes pitiable. Take Calumet City with its 10,000 inhabitants, in the great Calumet industrial section just south of Chicago, for example. A physician of that city writes as follows: "Have no health officer. Layman alderman acting in that capacity." As to the

fact that annual health appropriations are zero, he says, "A sad situation. Like to see it corrected."

In small cities like Wilmington the health officer sometimes serves without pay, and it is seldom that anyone else is employed in the Health Department. Sometimes city and Board of Education unite in employment of a nurse, as at Wheaton. While Waukegan and Lake Forest operate under special legislative charter, in health structure they resemble other Illinois cities.

Nine Indiana cities are within our fifty-mile circle, ranging in size from Gary, with 100,000 people, down. Although Indiana statutes abound in special legislation, and our nine cities are found in three separate classes besides, their health powers are quite similar. As in Illinois, the Common Council promulgates all rules deemed expedient for the promotion of health and the suppression of disease, in addition to many specific grants of legislative power.

The mayor appoints the Board of Health, which names one of its members secretary and health officer. The latter official performs the usual functions of the local health officer, besides some unusual ones, such as reporting deaths of eligible voters to election authorities. He receives a salary of two cents per capita of the city's population according to the last federal census, with a maximum of $1,500. Duties of the Board of Health are somewhat less perfunctory than in Illinois, including several special statutory grants of power. In both states the Board suggests ordinances to the Council for approval.

As for per capita expenditures, data were gathered for 6 cities. Gary alone spent over one-fourth the Chicago per capita, and 2 spent less than one-eighth. Salaries of health officers for 8 cities ranged from $65 to $2,325.

Kenosha, Wisconsin, with 50,000 population, is the only other regional city. Local health authority is given in much greater detail in Wisconsin statutes than in Illinois, but the general outlines of the health authority are similar in actual practice. The health officer is specially required to make an annual sanitary survey and enforce the state health law. Liaison with state officers is much closer in Wisconsin. The city manager appoints the health officer, who receives a salary of $5,000 and thus ranks next to the Chicago health commissioner in compensation. Kenosha's annual health expenditure per capita is larger than that of any other regional city except Chicago, being nearly 60 per cent that of the larger city.

In addition to the cities, two states contain incorporated towns within the fifty-mile radius. Cicero, in Illinois, with some 65,000 population, is the largest of these towns. Organized prior to the passage of the Cities and Villages Act of 1872, it never elected to come under the provisions of that legislation. There is a Health Board, and the town trustees select the health commissioner. These authorities possess powers and perform duties practically identical with those of the corresponding officials of the Illinois cities and villages. The health commissioner, a part-time officer, receives $3,000, and the per capita expenditure for health is over one-fourth that in Chicago, making Cicero rank high among the suburban municipalities.

Although Cicero is the only Illinois town in the Region, there are twenty such incorporated towns in regional Indiana. These are usually larger in area and have fewer corporate powers than the Illinois villages. The towns differ from the cities in that the Board of

Trustees is the Board of Health, *ipso facto*. The town powers are less extensive than those of cities in the erection of public works, and some other minor particulars, however.

The city health officers must be physicians, but not so with the towns. Any "respectable person" may serve. The health officers have a statutory allowance of two cents per capita, 1920 census, which would permit a salary range of $5.16 to $69 among the fourteen regional towns in existence in 1920. And as for the six towns incorporated since 1920, their health officers are apparently expected to serve without pay. However, some of the towns report that they pay their health officers more than the regular statutory allowance, but never more than $50 per year. The total budget for health purposes, including possible emergencies, rarely exceeds $100 per year among these towns.

Naturally, health activities in these communities are not extensive. Especially is this true in the six incorporations to which the Region has given birth since 1920. Until the 1930 census reveals that they have inhabitants, their health officers, if any, must serve without remuneration, and the general lack of local effort is indicated in the following rather defensive statements:

> We co-operate with the City of Michigan City on health and sanitation questions.—Long Beach, Ind.
>
> Our town is a high class restricted subdivision on Lake Michigan and the residents are all people with other homes in Chicago, Gary and other cities.—Dunes Acres, Ind.

Three of the six new towns are on Lake Michigan, and two old towns have extended their borders to the lake since 1920. Our chapter on "Water and Sewage" will reveal the menace of total absence of health-control

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measures in these communities. It is difficult to give a clear picture of the disorganized status of public health work in these Indiana communities, but perhaps these two statements of health officials just outside our giant circle will serve the purpose.

I am very sorry I am unable to reply more fully to your request. If there is another town in the United States as poorly organized as this one, I would like to know where it is located. There is no organization of anything. No appropriations for nurses, control of disease, medical care of the poor, etc., etc. The county furnishes all the aid we get along these lines, same as rural districts. I don't know if this will do you any good, but it is the best I can do under existing conditions. I tendered my resignation three or four years ago. But I doubt if there has been a Board meeting since. At least my resignation has not been accepted. An entirely new board took the reins January 1st. Don't know if they will do any better or not. But they claim there is no money.—WHEATFIELD, IND. [1920 population, 382; health officer's legal salary, $7.64].

Our town expense for 1927 will run a little under $50. The Public Health Nurses and school doctors are paid by the county unit and the township unit. That makes it impossible to give you the amount actually spent in this town on public health.—REMINGTON, IND. [1920 population, 1,044; legal salary of health officer, $20.88].

If the first writer were to look about him with more care his town might not seem so bad in comparison. The conditions he describes are duplicated or approximated in most of the little Indiana towns springing up southeast of Chicago. All they do is to collect vital statistics, and they don't do that very well. There is, however, one notable effort to reach higher standards. Hobart, East Gary, and New Chicago have the same health officer; but his legal annual salary of $91.26 is scarcely sufficient to permit him to devote the necessary time to his district of twenty-seven square miles—a district now sharing in the vast industrial expansion of the neighboring city of

Gary. Even considering present needs of the communities, the sum is paltry.

In addition to incorporated towns and cities, there are about 140 regional villages. One is located in Michigan, the rest in Illinois. In their health functions they resemble the Indiana towns. They range in population from Oak Park, with its 60,000 inhabitants, to communities of less than 100. In area they vary from Niles Center with 6,000 acres to Mokena with 60. But for legal health organizations, power, and duties, Oak Park and Niles Center are identical with Mokena and Romeo. Nor is New Buffalo, the Michigan village, enough different to deserve a special description.

In Illinois the village boards of trustees and boards of health perform health functions practically identical with those of city councils and boards of health. Except as to a few things like tax rates the villages are distinguishable from the cities only in names and titles. In presenting a picture of health activity among the villages we shall discuss the better examples first.

Winnetka and Kenilworth, adjoining villages on Lake Michigan north of Chicago, are outstanding. They have combined resources to promote a common health program, paying $7,620 and $720, respectively, into a common fund. Their health officer is one of the three in the Region with specific public health training. The organization of public health work is exemplary; morbidity and mortality rates are low.

Elsewhere, however, the organization is distressingly fragmentary. Almost nothing is spent in most cases. East Dundee and Carpentersville (in Kane County) employ the same health officer, but the villages do not seem to have been stimulated into any exceptional degree of

health activity. Oak Park stands high in public health rankings, but this is mainly due to efforts of private and not official agencies. Sometimes other governmental agencies than the villages are active in support of a village health program, notably school districts, counties, and, very rarely, townships. When any work worthy of mention is done in villages under 2,000 population, it is usually by some ambitious young physician-health officer who donates his time. Generally speaking, there is almost total absence of activity.

Some excerpts from letters written by village officials will serve perhaps to illustrate the situation.

1927 expenditures records show nothing paid out as Health measures to date, no care of poor on record, this made our record 100%. We have Health Officer but no salary; paid only when his time is taken up.—NORTHBROOK [population, 660; 8 miles north of Chicago].

Health officer serves without pay. We appropriate $150.00 per year but most years we have gotten by without paying any of the appropriation.—WINTHROP'S HARBOR [population, 510; 30 miles north of Chicago].

$100 appropriated but seldom more than $10 or $20 a year spent for quarantine enforcement.—ITASCA [population, 350; 10 miles west of Chicago].

There is no salary connected with our Department. The only marked expense we have is for fumigation which amounted to about forty dollars for the year 1927.—HAZEL CREST [population, 800; 6 miles southwest of Chicago].

There is one hundred dollars appropriated by the Village Board each year to take care of that work and the clerk acts as Health Officer. We used thirty-eight dollars of this fund for the year Nineteen Twenty Seven. It was expended for putting up and taking down signs and for fumigating. We did not have any need for a nurse.—MONTGOMERY [population, 560; 30 miles west of Chicago].

The only thing we spend in that line if there is a doctor needed; the office work is gratis.—MONEE [population, 400; 20 miles southwest of Chicago].

There are no figures on the book for public health work.—PEOTONE [population, 1,100; 25 miles southwest of Chicago].

Our only expenditures under this heading (except perhaps a few minor items) are for sanitary sewer labor and upkeep.—LIBERTYVILLE [population, 2,500; 20 miles northwest of Chicago].

These cases are not selected; they are typical. If any further comment or explanation of the situation is needed, perhaps it is provided in the following quotation from a letter written by the treasurer of Niles, a village of 2,000 inhabitants adjoining Chicago on the north.

The last fiscal year I did not spend any money in this line except Sept. 3, 1926, I paid $5.00 for removing a dead horse. The Village of Niles is just now turning from a plain rural village, to a suburb of the City of Chicago. In 1900 when the Village organized, it appointed a local doctor as Health Commissioner without a salary only his practice, he made some suggestions reported contagious diseases, and had him posted signs of it, but he soon moved away, and the office fell to the President and Clerk, the practicing doctors had to report contagious diseases, the Chief of Police had to post signs. The President when necessary closed schools, posted notices about mad dogs or other dangerous cases. We still have a town supervisor for the town of Niles, he has to look after the poor or hurt people. I paid a good many times for Dr. bills antitoxine and other medicine everybody has to destroy his own garbage and refuse. We have most all over put in city water and sewers to be taken care of by the Sanitary District. If our village gets more populated of course then we have more regulation about our sanitary conditions. At present we are just as healthy as any other community around Chicago.

Unhappily enough, the final statement is quite true. Other villages around Chicago are no better organized to protect public health than is Niles. The Illinois Cities and Villages Act of 1872 was framed by men wholly unaware that germs exist, and the public health machinery is skeletal and inadequate. Moreover, the villages are too small and too poor to support the diversified public

health organization dictated by modern medical knowledge.

Regional municipalities of similar size, wherever located, whether villages, cities, or towns, and regardless of statutory provisions and powers, present remarkably uniform public health pictures. If expenditure of funds is a measure of alertness, the larger the municipality the better the health program.[1] Both statistical analyses and personal investigation indicate that health expenditures do usually correlate with effectiveness of health organization, and that in general the larger cities maintain more effective health departments than the smaller municipalities.[2] The smaller centers do not in any sense provide 1930 public health standards; yet the archaic system of maladministration seems firmly imbedded.

Outside the incorporations there are some five thousand square miles of rural area in the Region. Nor is the term "rural area" properly descriptive, for the municipalities of the Region are growing so rapidly that they spill their population out over their legal borders in all directions. While these people live under rural government, more than half of them are urban in occupation and outlook. Thus in 1920 there were 20,000 people living within Joliet township, outside the limits of the city of Joliet. In twelve other regional townships there are over 42,000 inhabitants, whereas the farming population probably does not exceed 10,000. Yet the health needs

[1] Financial statistics of the cities for 1925 show that Chicago, even exclusive of Tuberculosis Sanitarium costs, spent more per capita than any city over 30,000 except Kenosha, and more than twice as much as any except Kenosha and Evanston.

[2] Reference is to the regular city health departments. Inefficient operation of the Municipal Tuberculosis Sanitarium and the Sanitary District, and causes therefor, will be discussed below.

of this population, if met at all, must be met by township officers or employees.[1]

For health purposes, township officers have no jurisdiction over areas within incorporated municipalities. In some cases village or city is exactly coterminous with township, and then township officials have no health duties whatever. In some cases the greedy municipalities have gobbled up all but a few acres of the township, in which case the township officers still function, theoretically, for the "rural area," however insignificant. One township had only 124 rural inhabitants in 1920.

There are 119 Illinois townships all or partly within the Region. Of these, 6 lie wholly within one or more incorporated municipalities and possess no public health significance. Of the remainder, we have data on 67, or 60 per cent of the total. Nineteen spent nothing whatever during the year reported; 26 spent less than $50; and only 2 spent as much as $1,000. The last mentioned are Joliet and Lockport, with 20,000 and 4,000 population, respectively. They employ full-time nurses. Some few other townships contribute a share toward the support of a public health nurse for the community. Five townships employ part-time physicians for medical relief of the poor, but they are in no sense public health officers. However, in two cases the health officer of a municipality included within the township serves the township as health officer also.

The Illinois township Board of Health is made up of the supervisor, assessor, and clerk, acting ex officio. The supervisor himself acts as supervisor, unless a physician

[1] We do not here refer to Indiana. The situation is different there, and will be discussed below.

is employed for this specific purpose. We have already stated that this is almost never the case. The Board has legal power to enact necessary public health rules. It should provide free vaccination and disinfection service, and require reports of all dangerous communicable diseases. The Board members receive $1.50 per diem for time actually spent in protection of public health. But in reality the Board rarely meets, and the supervisor's efforts are confined to posting quarantine signs and to fumigation.

The entire Illinois "rural area" is under this system. The health officers are without public health or even medical training. They are health officers merely by virtue of election as township supervisors, and are predominantly farmers. These men in no way may be blamed for failure to maintain a proper health program. If they did enforce the law energetically they would only incur the ill will of their neighbors, without receiving even a reasonable financial return. One supervisor reports that in 1927 he spent 270 hours, drove his automobile 500 miles, and received $115.50 in compensation.

The Illinois Department of Public Health recently made a survey of local health administration. The Director states the findings:

> The larger municipalities had fairly well organized health departments but the remainder of the State, divided into some 2700 districts, had for health officers persons upon whom the law imposed this responsibility by virtue of some other office to which they had been elected—such as county supervisor, assessor, town clerk, village president, etc. Not only were these men untrained in public health work, generally speaking, but they frequently changed with local elections and the State Director of Health had no means of knowing about it.[1]

[1] Isaac D. Rawling, *Rise and Fall of Disease in Illinois*, p. 196.

Under such circumstances the prevailing inactivity of these officers in regional Illinois as elsewhere is only to be expected. Incidentally, the degree of state supervision cannot be high if the state director does not have an accurate list of local officers.

Township health officers in Wisconsin and Michigan are appointed, not elected. Of the 6 regional townships in these states we have information for 5. Of these, 4 employ a physician as health officer, and the other a registered nurse. However, the unit is so small that the salary paid is necessarily insignificant, and hence little public health work is done. Indiana townships have no importance in this connection, for public health in the "rural areas" is directly administered by the counties.

There is a strong current tendency among public health administrators to favor the county as a unit for local health work outside of urban centers. It is urged that the county is the ideal area for direct "rural" health administration, at least under the present governmental set-up. Apart from Cook and Du Page, there are 7 counties in regional Illinois, and 1 each in Michigan and Wisconsin. Each of these 9 employs one or more "county nurses," either out of public funds or with money provided by some county charitable organization, or both. However, in the main, the work of these nurses is limited to the schools, and they do not possess the plenary powers necessary to a well-rounded county health administration.

The Cook and Du Page County departments employ 18 and 3 nurses, respectively, in addition to their directors. Their budgets run to about $60,000 and $10,000. We have already noted that these departments are unique in the Illinois Region, and that they exist without statutory authorization. Remember also that the

metropolitan influence is most strongly felt in these two counties. Despite express statutory permission, Kenosha and Berrien counties have not established county health departments, whereas Cook and Du Page have established them without permission and possibly in excess of legal authority. If regional health control were centered in Chicago instead of four distant and unconcerned state capitals, the entire Region might be enjoying the benefits of county health administration or its equivalent. In Illinois, at least, the state government stifles rather than encourages local initiative in this direction.

In the five regional Indiana counties direct rural health administration centers in the county health commissioner chosen by the county board. He has jurisdiction over all area not within incorporated towns and cities. The cities and towns, however, are expected to contribute to his support in taxes, but the burden is not great since he receives only $1\frac{1}{2}$ cents per capita. The entire Lake County budget only totals 2 cents per capita ($5,000), whereas the Chicago expenditures are nearly $2.00 for each inhabitant, if we include the Municipal Tuberculosis Sanitarium. In Jasper County, with a much smaller population, the total expense is only $180 per year.

None of the county directors is employed full time, but at least they are physicians. At any rate, the situation is far better than in the Illinois townships, and could be better still under energetic direction and with sufficient funds. This conservatism in the matter of expenditures, together with the poor organization of the State Health Department and lack of proper encouragement from it, seems to have neutralized in large part the advantage of a superior governmental mechanism.

Aside from the 2 Illinois counties with excellent health departments doing direct health work, there are 326 boards of health and 326 health officers in charge of the Region's public health. Each of the 328 units is legally independent of the others. Their very number makes it inevitable that most of them will be unable to support a modern program. Most of the jurisdictions are practically non-active in health matters, but their existence keeps the larger and better-equipped units from taking control. Before effective work can be done the number of health boards and officers must be reduced to the point where full-time employees with public health training may be engaged.

III. AD HOC GOVERNMENTS

These are the afterthoughts. The state legislatures seem to have realized that the traditional machinery of government was unable to meet modern health needs, so they have sought to reinforce the ranks of the disorganized health army with various auxiliary governments. Instead of trying to repair the existing machinery, to readjust it to meet the changing situation, our sovereign states simply introduced several new types of government into an already muddled governmental tangle. As a result our metropolitan community may, in addition to all the agencies already mentioned, boast of 11 sanitary districts, 5 tuberculosis sanitarium districts, and 1 public health district.

The Sanitary District of Chicago is the largest of the *ad hoc* agencies, in power, authority, and expenditures. It includes all of 40 municipalities and parts of 20 others; it embraces 440 square miles of area and ministers to 3,500,000 people. It was created in 1889, after the sani-

tary problems of our mushroom metropolis had become acute, and land area has been added to it by almost every subsequent Illinois legislature until it is more than double Chicago in area. In 1928 the expenditures of the district exceeded $50,000,000.

The primary purpose of all the sanitary districts is sewage disposal. To perform this function for Chicago, the Central District has reversed the currents of various rivers which did flow into Lake Michigan, but which now carry a large part of Chicago's sewage down the Illinois River and thence into the Mississippi. In recent years, moreover, the District has been spending huge sums for sewage-treatment works at various strategic points throughout the city.

Besides this main purpose, the District has incidental powers and duties most of which have no health significance. One recent development, however, is full of interest. After Dr. Bundesen was dismissed by Mayor Thompson as health commissioner of the city, the Sanitary District immediately created a health department and named him director. Although usually the District had no place in the ordinary health-administration field, either as a direct or supervisory agency, the department budget for 1928 was $249,270. The total spent by the department for wages and salaries, as revealed by the clerk's statement for 1928, was $122,141.49.

Since Dr. Bundesen's election as Cook County Coroner, and the unsavory scandals of 1929 concerning the Sanitary District, the health department has been dropped. Apparently this arrangement was nothing more than a temporary expedient. While it operated it did work identical with that of the Chicago Health Department, the Cook County Health Department, and

the numerous local departments within its jurisdiction; and it covered no area not already under the control of one or more of these departments. We do not argue that the combined personnel was too numerous nor that there was nothing such a department could do. We only question whether efficiency may not be better attained through concentration of responsibility and control according to some considered plan, than through multiplication of departments engaged in the same activities in the same area but entirely independent of one another.

There are 10 other sanitary districts in regional Illinois, with new ones forming almost every year. Whereas the Chicago district was established by legislative fiat, these are organized by popular vote under permissive legislation. Of the 10, 6 are contiguous to the larger Chicago district. The largest of the 10 spends less than 1 per cent as much as the Chicago district, and the smallest about 2/100 of 1 per cent. Aside from the North Shore district, none of them is as large as an old-fashioned township. They are wholly inadequate to deal properly with problems that affect so many persons in other jurisdictions.

Realizing this, the Illinois legislature has enacted a law permitting establishment of river conservancy districts—glorified sanitary districts with greater powers and larger areas. One of these was established in Kane and neighboring counties, including two of the old sanitary districts and many other municipalities and huge "rural" areas besides, but litigation against it was successful and it was annulled.[1] One other such district is

[1] This was the Fox River Conservancy District.

in process of formation on the southern border of our Region, but is not yet in operation.

Although both Indiana and Wisconsin have established permissive statutes resembling those of Illinois, no sanitary districts have been established in those states within our Region.[1] It seems especially urgent that the congested districts in Indiana just across the state line from Chicago should establish such a district, but the voters have consistently rejected the proposal.

Although there are four county tuberculosis sanitarium districts in the Region, the City of Chicago Municipal Tuberculosis Sanitarium far outranks any of them. Recently the average annual budget has approached $3,000,000. It was organized in 1916, and took over the anti-tuberculosis functions of the Chicago Tuberculosis Institute inside the city, and is allowed a special tax rate. Although the act permitting its creation applies to other cities and villages, no other regional municipality has adopted it.

Like the Chicago Municipal Sanitarium District, each of the four county districts supports a sanitarium, provides clinics, and does other anti-tuberculosis work. Although small in comparison with the Chicago district, the Lake County, Indiana, district spends about $140,000 annually, and those of Will and Kane counties about $85,000 and $60,000, respectively.[2] The officials

[1] The "sanitary districts" into which Wisconsin is divided for practical state health administration have wholly different functions and are not considered here.

[2] The other sanitarium is maintained by Kenosha County, Wisconsin. Each of the counties levies a special tax in support of this work. It might be remarked in this connection that each of the eleven sanitary districts levies a special tax also.

and staffs of these municipal and county sanitariums have no connection whatever with the other city and county health authorities, unless some casual contact occurs. The purpose for which they were designed is highly admirable, but it cannot be denied that they complicate rather than simplify the current governmental machinery.

There is still one other type of *ad hoc* health agency—the public health district. Statute permits creation of a separate government with a special tax rate upon popular approval according to referendum—this government to have the sole purpose of performing the usual function of a modern health department. The theory is that in this way the small municipalities and townships may combine resources and establish a suitable health program. Unfortunately, however, the only district that has yet been established in the Region is identical in area with the city of Berwyn, which is in turn identical with the township of Berwyn. Berwyn seems to have adopted the legislation partly at least because it permits the levy of a special tax. The health director has powers and duties quite indistinguishable from those of city and village health officers, except that they are enumerated in greater detail. The Town Board constitutes the Board of Health.

Each of the other regional states permits creation of public health districts with the same purposes in view, but no community within the Region has elected to use the legislation. The need for this sort of consolidation seems clear, but voluntary unification seems hopeless. A complete reorganization of local governments from above is the only reasonable solution.

IV. GOVERNMENTS WITH ONLY INCIDENTAL HEALTH FUNCTIONS

These include school districts, park districts, forest preserve districts, library districts, drainage districts, and mosquito abatement districts. Each has functions that clearly relate to public health, but none of them approaches its problems from that point of view. Their health work is wholly incidental to the activities in which their primary interest lies.

There are nearly one thousand school districts in the Region. Each is potentially a public health factor of great importance. School-building sanitation, use of the schools in control of contagion, even public health instruction as now practiced, are minor in significance beside the generalized health program which might be undertaken. All over the United States educators have come to realize that sickly children do not learn well. Formal education being the *sine qua non* of American life, correction of physical defects and promotion of general hygiene among school children have been accepted by the public as perfectly natural—not at all in disagreement with American theories of individualism.

The schools of Gary, Indiana, are famous in this respect. They maintain a competent staff of physicians and nurses. Physical examination of students, continuous health supervision, free correction of defects when necessary, are all matters of routine. In Chicago and some other centers the responsibility for school hygiene is placed upon the City Health Department. In the rural areas full responsibility rests on the county nurses, who are unable to cover the enormous fields assigned to them in anything but the most sketchy fashion. In other districts the Board of Education provides a school nurs-

ing service. But the program is far below its possibilities and in many districts practically nonexistent. In general it is disorganized, decentralized, inefficient.

Whether the school-hygiene program should center preferably in the school or the public health authorities does not appear to be of vital importance. It does seem necessary to revamp the entire system along lines dictated by careful study and logic. Whatever school hygiene exists developed sporadically and spontaneously in the various localities, without centralized guidance. Like Topsy, these programs "just growed." But this is no reason why disorder and neglect should continue.

There are scores of park districts and several forest preserve districts in the Region of Chicago. Recreational facilities profoundly influence the public health, but the relationship is still intangible and practically impossible to measure. Their point of view is wholly distinct, and they should receive detailed analysis in a study of regional recreation rather than regional health.

The same thing is true with other types of districts. The 200 regional drainage districts—mainly designed to drain low or swampy farm lands—are somewhat related to the problems of sanitation, and the library districts might profitably be used in an extensive program of popular health education. Yet their primary purposes are such that it would be presumptuous to give them more than passing consideration in this study of public health.

The three regional mosquito abatement districts bear a somewhat closer relation to public health, at least in theory. Actually, however, not a half-dozen deaths due to malaria have occurred within the Region in any recent year. Mosquitos are blamed for minor skin infec-

tions and boils, but their real degree of responsibility is doubtful. At any rate, the Sanitary District of Chicago, Cook County, the Cook County Forest Preserve District, to say nothing of the city of Chicago, the state of Illinois, and at least one private organization, were already employing anti-mosquito measures. But these forces were deemed unable to cope with the doughty mosquito. A new type of local government must needs be created, so permissive legislation was enacted and there are three mosquito abatement districts, all in Cook County. Needless to say, each levies a special tax. Expenditures average nearly fifty thousand dollars per year.

In conclusion, then, there are 101 supervisory agencies, 326 direct health departments, 17 districts established primarily to meet some specific health need, 9 counties with incidental health functions, and about 1,350 other local governments with a casual interest in some phase of public health—each with jurisdiction over all or part of the Region of Chicago. If it is true that the Region of Chicago is properly a public health unit (and we believe the facts brought forward in this study clearly indicate it), this very multiplicity of agencies and governments is significant. Grave public health problems exist in the Region of Chicago, and the facts stated in this chapter show that these problems are of immediate interest to the student of government.

CHAPTER III

VITAL STATISTICS

It has been said that dead men tell no tales, but this is not true if we know why they died and use proper statistical methods. The following statement puts the case concisely:

> A knowledge of how how many people die; what the causes of death are; the age groups affected by mortality; the sections in the city and the character of the population most adversely affected by fatal diseases are just as important in the planning of a comprehensive and efficient public health service program and just as essential in securing and maintaining public support and confidence in that program, as the reports of auditors and statisticians are to the successful management of financial institutions.[1]

Careful collection and proper use of vital statistics is most important. Vital statistics stimulate popular interest by presenting the needs of the moment in graphic style. If this or that local death-rate is high in comparison with the similar rate in comparable communities, that fact may help stir public opinion to demand action. Something more weighty than opinion or rule-of-thumb analysis is needed to prove the effectiveness or failure of the public health program.

The health administrator should always have three classes of statistical information at hand: standardized mortality data for comparison with other localities and former periods; morbidity data covering current contagion; and special local studies covering important

[1] *Illinois Health News*, XIII, 213, by B. K. Richardson, chief of the Illinois Division of Public Health Instruction.

diseases in relation to important risk groups. The morbidity data will be considered in detail in the three following chapters. In this chapter we shall deal with collection, comparability, and application of birth and death statistics in the Chicago Region.

I. COLLECTION OF VITAL STATISTICS

The value of statistics, of course, depends upon the reliability of the basic data. Reliable conclusions cannot be drawn from original reports of doubtful authenticity. In the Chicago Region, as in most parts of the United States, the completeness and accuracy of data are open to grave doubt. The dangers involved are well stated by a noted vital statistician.

> The statistical method is in itself dependable, although it is true that statistics may be vitiated by the use of inaccurate or incomplete data as a basis or of faulty method in classification or compilation. . . . .
>
> Vital statisticians may compile the data of deaths as recorded in death certificates without knowing that the causes of death given may be erroneous in a large proportion of cases. In such instances the statistics of causes of death must be equally erroneous.
>
> Statistics of births may be compiled and published and accepted by the unknowing as representing actual conditions. The fact may be that in the State or City under consideration only 80 per cent or may be only 60 per cent or 50 per cent of all births were registered during the period under consideration. The derived statistics may therefore be worse than useless, for, while they have the appearance of giving information, what they actually give is misinformation.[1]

Gathering of dependable base data is, then, most important. Responsibility for this rests primarily upon the local registration districts. In Indiana, Wisconsin, and Michigan these districts are identical with the units of

[1] John W. Trask, "Vital Statistics," in Milton J. Rosenau, *Preventive Medicine and Hygiene* (New York: D. Appleton & Co., 1927), Sec. XII. p. 1132.

direct health administration. Thus reports of births and deaths are gathered separately by the 3 townships and 1 village in Michigan; by the 3 townships and 1 city in Wisconsin; and by the 20 towns, 9 cities, and 5 counties in regional Indiana.

This system prevailed formerly in Illinois, but the state director of public health may now establish local registration areas upon lines distinct from those of the direct health units. Cities, townships, towns, and villages may be combined or divided, although there are some limitations on the director's power. There are only 173 primary registration districts in regional Illinois, in contrast with the 284 which would exist had not the reorganization occurred. Ten of the new districts contain all or parts of from 4 to 8 health units.

Despite these Illinois consolidations, however, there are still 215 primary registration offices reporting the births and deaths that occur within the Region of Chicago. Is this necessary or efficient? In answer, let it be pointed out that a single district manages to do all the reporting for two-thirds of the regional population, and do it rather well, in comparison at least. The remaining 35 per cent of the population is served by 214 separate registration offices. Indeed, only one-eighth of the population lives outside the 15 largest areas.

In addition to the number of districts there is another complicating factor. The health departments rarely have anything to do with the collection of these reports. The recent Public Health Service report covering practice in the 100 largest cities of the United States made a statement apropos in this connection: "In the reports of these surveys comment was made that the best registration is apparently made in cities where the local health

department has immediate responsibility. With few exceptions poor registration results from vesting local authority in the hands of other than the health officer."[1]

Nevertheless, of the 173 regional Illinois registrars, only 10 are health commissioners.[2] For the rest, 161 are village, township, or city clerks, 1 is a city collector, and 1 chief clerk of the Elgin State Hospital. In these municipalities, including Cicero, Joliet, Aurora, Elgin, and Waukegan, health authorities are without control over (and often without interest in) collection and analysis of vital statistics. Happily, in Indiana the health officers of cities, towns, and counties, respectively, are *ipso facto* registrars of vital statistics; but in regional Michigan the township or village clerk acts, and in Wisconsin the township clerk, except for the city of Kenosha where the health officer performs this function. In all, only 46 of the 215 registrars are health officers.

The very size of the Chicago Bureau of Vital Statistics permits an efficiency of operation not possible in any other regional district. Even in such a routine matter as copying birth and death certificates this is apparent. Chicago has installed photostatic equipment that makes errors impossible and saves well over ten thousand dollars per year. But nearly all other regional districts are too small to make such a system practicable, and continue laboriously to make their copies by hand. All of the other 214 districts might send their certificates to the Chicago office to be copied without taxing seri-

[1] *Public Health Bull., 164* (July, 1926), p. 69.

[2] These are Chicago, Oak Park, Evanston, Berwyn, River Forest, Elmwood Park and environs, Wilmette-Winnetka and environs, Hinsdale and environs, Aurora and environs, Zion City and environs. See *Directory of Local Registrars of Vital Statistics* (3d ed., June 1, 1926), published by the Illinois Department of Public Health.

ously its present capacity. However, in no case is this done.

The degree of state supervision over local collection work is quite uniform throughout the Region. In Illinois, Wisconsin, and Michigan the local registrars are constrained to perform their duties through the dual sanction of bribe and threat. A fee of from 10 to 25 cents accrues to the various officers making each report. Incidentally, under Illinois law Cook County is required to pay Chicago something more than 10 cents per certificate recorded by the city, but the County Board has simply refused to pay and the city has been unable to collect. Indiana law permits no fee to the local registrar.

Each death must be reported before issuance of the burial or removal permit. Births must be reported to the registrar within 10 days in Illinois, 5 days in Michigan and Wisconsin, and 36 hours in Indiana. The local registrar must report his monthly "haul" to county or state officials before the tenth day of the next month in Illinois, the seventh day in Indiana, the fourth day in Michigan, and apparently when he pleases in Indiana. In Illinois and Wisconsin the registrar is required to keep a list of physicians and midwives practicing within his jurisdiction, to permit more complete control.

Lest some misunderstanding arise, however, let it be known that none of these statutory provisions is rigidly enforced. The state governments are too far removed from the local situation; they are too much occupied with other problems to make more than sporadic and ineffectual attempts to force compliance. There is no lack of statutory penalties, however, ranging from a five-dollar fine for first offense to a two-hundred-dollar fine and a jail sentence for repeated offenses. But these need

alarm no one. Within the Region there is no attempt at enforcement except by Chicago, and in that city prosecutions are few.

The Division of Vital Statistics in the federal Census Bureau has been a real stimulus in the Region as elsewhere. Establishment of the birth- and death-registration areas with standard requirements for admission has resulted in a notable improvement in collection of reports. All of the Chicago Region is included in each area, but none of the United States maintains standards comparable with those of the old world. Were it not for federal encouragement and pressure conditions would certainly be much worse.

But however valuable this stimulus may be, final responsibility for reporting rests upon the local governments. Accuracy demands painstaking care on the part of physicians, midwives, undertakers, and others reporting. There are enough careless people in these professions to demand a constant legal check. Otherwise there will be more or less gross neglect. Efficiency in local reporting varies widely among our 215 districts. Chicago encounters greater obstacles than the smaller jurisdictions, naturally, but while its reporting is imperfect it compares most favorably with that elsewhere. To give a basis for comparison, we shall consider the Chicago system with some degree of thoroughness.

From 1908 to 1916 the city of Chicago did not record births at all, and in 1919 less than 75 per cent of actual births were reported. In 1920 a great drive was made to increase reporting, and a Hearing Board was set up to consider violations of the law. In 1921 the Board held 45 sessions, heard 1,202 cases, and obtained 7,295 certificates thereby. This seems to have had a salutary ef-

fect, for in 1922 only 709 certificates were forthcoming, although more cases were heard than in the previous year. However, since 1922 the Board has been much less active, holding only 7 sessions in 1925 and obtaining only 40 certificates.[1]

The City Health Department instituted court proceedings against some of the worst offenders—something practically unheard of elsewhere in the Region. Although a marked improvement is evident since 1920, it is not possible to estimate present trends. The most recent published report of the Public Health Service covered 1923, and as for Chicago stated that "both birth and death certificates are systematically checked for completeness and accuracy, and probably 93% of the births and 100% of the deaths are reported."[2]

While further improvement of reporting since 1923 is probable, the Health Department's estimates of completeness have been consistently too high. For instance, it estimated completeness for 1921 to be over 99 per cent, but delayed reports since received have revealed some 9,000 unrecorded births, making actual completeness less than 87 per cent. In 1922 the United States Census Bureau estimated that 92.5 per cent of all births were reported, but delayed reports have shown this figure to be too high.

In 1925 the Chicago Health Department again estimated that it was obtaining over 99 per cent completeness, but late reports turned in during 1926–28 have already made the total exceed the estimate. Since the bulk of delayed reports are made when the children start to school, about six years later, most of the delayed re-

[1] Successive reports of the Chicago Department of Health.

[2] *Public Health Bull., 164*, p. 574.

ports for 1925 will come in the years 1930–32, and on the basis of past experience at least 3,000 children were born in Chicago that year whose existence the Health Department denied.

Delayed reports received during recent years are less numerous than formerly. This must mean either that there is much better reporting at the time of birth, or that there is greater laxity in obtaining delayed reports. Probably the former is true, since the total of 60,888 reported in 1927 was the highest on record. But the 1928 total was only 59,016, a decline blamed by the Health Department on a falling birth-rate.[1] More probably it was due to laxity of the Department in collecting the data.

It is seen that the situation is not wholly satisfactory in Chicago, where an entire bureau employing 20 persons is concerned solely with these problems. What, then, must be the situation in the smaller districts, and especially in those manned by city, village, and township clerks? Exact information is not available, and could be obtained only through exhaustive investigation. However, the 1922 federal survey preliminary to admission of Illinois to the birth-registration area showed birth reports in Will and Kendall counties to be less than 80 per cent complete, and it is unlikely that the gap between these districts and Chicago has been closed since that time. In Wisconsin 8 per cent of the local registrars are delinquent, and Michigan has been getting admittedly poor results from the system. No printed matter is available covering vital-statistics prac-

[1] Completeness of birth-reporting directly influences the infant-mortality rate, but the error is in the "right direction," because the poorer the reporting, the higher the infant-mortality rate appears.

tice in Indiana, but personal observation would suggest that even greater carelessness exists there.

Reporting practice in large cities is generally superior to that in smaller ones. But while Chicago rated high even among the larger cities in the Public Health Service survey of 1923, mentioned above, the 3 regional cities included in a survey of smaller cities recently made all ranked in the middle third.[1] In 1925 the Illinois Department of Public Health made an appraisal of 15 Illinois cities between 30,000 and 100,000 population, 5 of which are in the Region of Chicago. Although the general level of vital statistics reporting was not high, 2 of the 5 regional cities ranked fourteenth and fifteenth, respectively.[2]

Prompt reporting of births is very important, for it permits an alert health department to make immediate contact with the home and supply invaluable information. Most preventable deaths of infants under one year not assignable to prenatal causes are due to conditions that cannot be checked after the first month. Therefore, a leading authority declares that a twenty-four-hour limit for birth reports should be established in cities. He says that "infant mortality cannot be greatly reduced in cities unless this prompt report is made."[3]

In Chicago reporting is quite prompt and, what is more, is followed up by the Health Department in commendable fashion, but in most parts of the Region this

[1] American Child Health Association, *A Health Survey of 86 Cities* (American Child Health Association, 370 Seventh Ave., New York City, 1925). The three regional cities are Gary, Kenosha, and Cicero.

[2] Aurora and Joliet, respectively. While the Child Health Association Survey found Cicero only an average city in this respect, Cicero, Evanston, and Oak Park ranked with the better half of the smaller Illinois cities.

[3] George Chandler Whipple, *Vital Statistics* (New York: John Wiley & Sons, 1919), p. 111.

is not true. Although Indiana has a stringent 36-hour legal limit, it was the almost invariable comment of the health officers there that births were not promptly reported. Few of them even knew the legal limit for birth reports. The leading regional health officer in Wisconsin frankly stated that reports came in late. Illinois law permits a 10-day delay but even this limit is not enforced. One health officer, who is also registrar for 20,000 people, when questioned on this point just laughed and said, "The physicians report as convenient to them. All births are reported eventually."

The part-time health officer with only a casual interest in his public health duties naturally hesitates to enforce the law upon his brother-physicians. An overdose of conscience would certainly cost him his personal popularity, without a single compensating factor. Moreover, since nothing is done with the reports in most jurisdictions, it makes no difference whether a birth is reported ten days or ten months late. But something vital must be wrong with a system which places responsibility upon persons who cannot accept it; which fails to make any use of facts as potentially valuable as these. Failure to gather this data accurately is indefensible.

The fact stands out that despite its large foreign and negro populations Chicago has more complete and reliable registration than most of the regional districts. The large district is the more efficient, in fact as well as in theory. The Chicago Bureau of Vital Statistics, employing 20 persons full time, keeps records for twice as many people as all the other 214 districts with their numerous part-time personnel combined, and does it much better. This multiplicity of jurisdictions serves no useful purpose; it condemns itself.

II. COMPARABILITY OF REGIONAL STATISTICS

Even if we could accept the published regional statistics as complete and reliable, they would not necessarily be comparable. Until the crude statistical data has been standardized to remove the most obvious variables it has little or no value for the purpose of comparison. Under any circumstances, population groups of different composition must be compared with the greatest caution.

Death- or morbidity-rates not "made specific," or corrected for age, race, and sex distribution, may be merely misleading. For instance, the same identical diphtheria rate may indicate opposite conditions in a community with a large proportion of children than in one mainly composed of adults.[1] Then, in addition to these factors, there is wide variation within the Region in occupational pursuits and the percentage of foreign-born. Finally, there are two further complications in the unreliability of population estimates and the increasing hospitalization of births and deaths.

The last two difficulties are of great importance from the standpoint of regional government. When few people could afford hospital care, it made little difference that the official records attributed the birth or death to the registration district where it occurred rather than to the district of actual residence. But nowadays, with

[1] To be properly comparable, death-rates must be figured on an age basis, and the "crude" figures "adjusted" on the basis of the "standard million," by statistical methods. For instance, more deaths from children's diseases would be expected in communities with a large proportion of children than where such percentage is small, and this difference is eliminated by the "adjustment." In this study the groups used were of such similar composition, however, that the "crude" rates were considered sufficiently comparable. See I. S. Falk, *Vital Statistics;* and George Chandler Whipple, *op. cit.*

ease of transportation throughout the metropolitan area, this failure to allocate records to the proper jurisdiction practically invalidates many regional statistics. Actually, ninety-five municipalities, large and small, are massed in a solid block around Chicago. Those with hospitals have high birth- and death-rates; those without have subnormal rates in almost every case.

By way of illustration, Cicero and Oak Park are adjoining suburbs just west of Chicago. Cicero is an industrial center with a large foreign-born population, whereas Oak Park is a better-class residential section. Naturally, one would expect birth- and death-rates to be high in Cicero and low in Oak Park, and the 1920 United States Census showed a much larger proportion of children under seven years in Cicero than in Oak Park. But Oak Park has excellent hospital facilities; Cicero, none. So the reported birth-rate for 1925 was less than 10 for Cicero and over 44 for Oak Park, while the death-rate published for Oak Park was 14.72 and that for Cicero 5.61. Figures for the score of municipalities near these, just west of Chicago, are thrown into similar confusion.

State penal and charitable institutions in Illinois, Indiana, and Wisconsin report their births and deaths through the local jurisdiction, playing havoc with the statistics for those districts which contain them. Michigan now makes each such institution a registration district in itself, but even this procedure does not provide a proper distribution.

Of course, the whole problem could be solved by allocation of each death to the jurisdiction of last residence and each birth to the residence of the mother. This would not appear, on the face of it, to be very difficult, but when the suggestion was made to the chief of the

Bureau of Vital Statistics of Chicago he pointed out that to obtain exact results it would be necessary to set up international machinery. Technically this is true, but actually almost all of the transfers would be regional. Moreover, the Chicago Bureau already assigns the births and deaths to the wards of residence, and not to the wards where they occur. Thus, initiation of the method we suggest would only mean extension of the system already in vogue within the city of Chicago. Beyond all question this would have a revolutionary effect on the statistics of many regional districts.[1]

Health officers interviewed on this point immediately protested that there is no statutory provision for interchange of such records among the 215 registration districts in the Region, and that if the entire Region is considered, such records would have to go through the four state health departments wherever state lines are crossed. Under present conditions this is perfectly true. In fact, we wish to emphasize this point. But instead of throwing up our hands in despair we suggest that the machinery of government in the Chicago Region should be overhauled to permit proper recording of vital statistics.

Certainly unless this is done vital statistics in the Chicago Region outside the one huge population group in Chicago itself will soon possess slight local validity. Even for Chicago the validity will rapidly become less. Already in 1926 in 8 per cent of all hospital births in Chicago the mothers were non-residents. The statistics used throughout this study have been grouped for large

[1] J. V. DePorte, director of vital statistics for New York State, found the statistical map of the state completely altered for tuberculosis rates after reallocation to residence. See *American Review of Tuberculosis*, XVII (June, 1928), 634 ff.

sections of the population to diminish the effect of this factor in so far as possible, but it is a source of probable error nevertheless.

As for population estimates, their unreliability affects all rates based on cases or deaths per 1,000 or 100,000 population. The federal Census Bureau estimates total population for all cities over 30,000 each year, but only on the assumption that the city is growing as fast this decade as the last, and no faster. This hypothesis may be fairly sound for isolated communities, but it is at its weakest in a metropolitan area. There population is constantly shifting from city to suburb, from suburb to suburb, or from suburb to city for a bewildering confusion of reasons. A new highway or better rail facilities may in three years throw the federal estimates of population in a satellite city off by tens of thousands.

We may illustrate this condition by comparing the federal estimates for the 11 cities in the Region over 30,000 with Dr. Jeter's estimates as of July 1, 1927. While the Census Bureau estimates Gary to have a population of 85,200, Dr. Jeter's estimate is 108,400—a variation of some 27 per cent. The two estimates for Chicago show the least variation—only 1 per cent—but in no other case are the two figures as close as 4 per cent. However, if we lump all the suburban cities together we find a much smaller variation than average, and throughout this study we have placed reliance only upon figures for large classes of jurisdictions combined.[1]

All this bears a vital relation to regional government. Special intermediate censuses are essential in metro-

[1] Helen Jeter, *Trends of Population in the Region of Chicago* (University of Chicago Press, 1927), Table XXVII. For United States Census Bureau estimates see *United States Daily*, II, 3043, col. 5.

politan areas, whereas they are not worth the effort in isolated communities. Shifts in population in and about the fringes of Chicago are so great and so sudden that at least a five-year interstitial census must be taken if regional vital statistics are to be anything more than approximations. The same problem confronts every metropolitan area in the United States, and in New York City small population districts have been established to afford a better check on local conditions.[1] This factor of population estimates brings into sharp relief the diversity between vital-statistics problems in a metropolitan community and those in surrounding areas.

There are many other factors that make it impossible to draw sound conclusions concerning any single population group in the Region outside of Chicago. Even by counties variation is enormous. Federal census figures for 1920 for Lake County, Indiana, showed 16.1 per cent of the population under six years of age, while there were only 10.2 per cent of the Kane County population within this group. Percentage of population over forty-five years was 13.8 in Lake County, Indiana, compared with 27.2 in Kendall County. Percentage of negro population in Lake County, Indiana, is 4.3, as compared with

[1] These have been accepted by the United States Census Bureau as standard, and will be permanent from census to census. A similar effort toward this solution is being made in Chicago, where proper boundaries for such districts have been determined by the Local Community Research Committee of the University of Chicago. Chicago was divided into 935 census tracts for the 1930 federal census, which were in turn grouped into 75 census districts, which the Department of Health has adopted. Professor E. W. Burgess, long interested in local communities within Chicago, is chairman of a Census Population Committee organized by Dr. Arnold H. Kegel, Commissioner of Health. See Leonard D. White, T. V. Smith, and others, *Chicago: An Experiment in Social Science Research* (Chicago: University of Chicago Press, 1929), especially chap. iv, "Basic Social Data," pp. 53–55.

less than 0.1 in Porter County. In Lake County, Illinois, there were 133.5 males per 100 females as compared with 99.1 in Kane County. And 30.3 per cent of the Cook County population was foreign born as compared with 11.1 per cent in Porter County.

However, many of these differences make the figures worked out in this study just that much more striking. For instance, 29.8 per cent of the Chicago population was foreign born as compared with 21.8 per cent in the remainder of the Region; and Chicago had 4.1 per cent of negro population as compared with 1.5 per cent for the remainder. These facts would suggest higher death-rates for Chicago than for the surrounding areas, whereas the exact contrary proved true.

As for age and sex distribution, there are some slight differences. Children under seven years constitute 14.2 per cent of the population in Chicago and 14.9 per cent throughout the remainder of the Region. Adults of forty-five and over show a percentage of 19.5 in Chicago and 20.9 outside. There were 102.9 males per 100 females in Chicago as compared with 109.8 outside.[1] Thus while individual suburbs might show considerable variation from the Chicago population, when they are lumped together the differences between Chicago and the composite totals are not considerable. If these differences still hold true, and if they mean anything, they indicate that children's diseases and degenerative diseases should be about 5 and 7 per cent, respectively, higher outside Chicago than in the city. Actually, the difference found is much higher than that.

[1] All figures in this paragraph are based on Dr. Jeter's Region of 15 counties, not on our 50-mile circle, but there is practically no difference in this respect.

To correct the statistics of the Region for all seven factors—age, sex, race, place of birth, occupation, residence, and population estimates—would be absolutely impossible. Even if it were possible as of 1920, conditions have since changed to such an extent that the results would be of doubtful value as to present application. Moreover, many of the errors are compensating, and on the whole seem to tend "in the right direction." That is, any error is probably on the conservative side and merely reinforces possible deductions. Finally, we have used only population groups of 500,000 or more in practically all cases, which makes variations between jurisdictions negligible or compensating in the end.

The use of vital statistics in evaluating public health activities in the Region of Chicago is made still more difficult by lack of uniformity in collection and publication of reports. The federal agencies have finally persuaded all four states to adopt the "International List of the Causes of Death" and to require standard birth- and death-certificate forms, but many discrepancies still exist.

Stillbirth statistics are not standardized, for example. In Indiana, Wisconsin, and Michigan they are supposed to be reported as both births and deaths, but Illinois provides a special stillbirth certificate. Even the definition of a stillbirth varies among the four states. In Illinois and Michigan it includes all those occurring after the fifth month of utero-gestation; Indiana counts only those occurring after the seventh month; while Wisconsin orders all reported, with a statement of the month attached. Consequently, on this important subject there are no comparable data for the entire Region.

In addition, each state has some "freakish" question

attached to the birth certificate, or asks questions in such a way as to make the results vary from state to state. Wisconsin collects special information on physical deformities; Illinois makes special provision for reporting illegitimate births; and Indiana tries to enforce its statute on prevention of ophthalmium neonatorum by asking an added question on the birth certificate. There is clearly a powerful tendency toward diversity in reporting forms—a tendency which the alleviative efforts of the federal government have helped to check. The federal government even pays each state for copies of all certificates and, to obtain uniformity when possible, sometimes goes back to the local registrars for explanations.

But still more disconcerting is the fact that each state follows a plan or method all its own in publishing its statistics. Each publishes many types of data, but it is almost impossible to find any one item of information published by all four. Even if three states publish it, the fourth usually overlooks it, in which case it may be obtained only by direct communication with the state registrar, if at all. For instance, Indiana does not distinguish between rural and urban areas in stillbirth statistics. Only Michigan gives full data on illegitimate births. Indiana lists infant-mortality figures only by counties.

Only Michigan and Wisconsin list deaths by ages, and they use different groups. Deaths by months are available only for Illinois and Michigan. As for deaths by causes, Illinois lists 13 main causes by counties and 36 for cities; Indiana lists 3 by counties and 6 by cities; Wisconsin lists 206 by counties and 14 by municipalities; but Michigan lists all causes by all units. When distinction is made between rural and urban areas, Illinois gives

data for municipalities down to 10,000 population; Indiana and Michigan down to 5,000; and Wisconsin for all municipalities however small. Illinois publishes an elaborate comparison of "downstate" with Chicago, but includes all the Region outside the city with downstate.

Under these conditions it is very difficult to use published vital statistics in an evaluation of regional health effort. The federal Census Bureau, has, indeed, published comprehensive and comparable data in its volumes on *Mortality Statistics* and *Births, Still-Births and Infant Mortality,* but these are not available for two or three years after the end of the period covered and so lose much of their immediate local value. It is noteworthy, however, that the federal agencies are the only unifying influence in regional vital-statistics publication, despite the obvious social and economic unity of the metropolitan area.

Our conclusions concerning comparability of vital statistics in the Region are as follows:

First.—Hospitalization of births and deaths is destroying the significance of all regional statistics outside Chicago, because these records are not allocated to place of residence. Statutory restrictions and bureaucratic inertia are largely responsible, and the presence of three state lines in the Region makes an early change improbable.

Second.—The Region is in peculiar need of an intermediate census because of the rapid shifts of population in its environment. This need is not shared by the remainders of the states in general.

Third.—The factors of age, race, sex, and place of birth make intelligent comparison of local figures for small jurisdictions worse than futile, but they largely

balance one another for the purposes of our study. Any effects they may have strengthen our conclusions.

Fourth.—Whatever uniformity exists in reporting forms and in publication of available data is attributable to the federal government and not to the four states.

Each of these difficulties except the third would be solved by making the Region of Chicago the real unit for collection of vital statistics. Births and deaths might then be allocated to place of residence just as simply as is now done within the city; an interstitial census might be taken without disturbing the tranquillity of the rural areas; and the problem of uniformity would be ended *ipso facto.*

All statistics used in this study have been for large groups in so far as possible. Chicago is taken separately; other cities over 10,000 in population have been grouped together; and all other areas have been arbitrarily termed "rural" and combined for this purpose.[1] The distinction is not drawn as finely as appears desirable, but it has the advantage of keeping each population group over 500,000 at all times. While many variables enter into the situation, we wish to emphasize that they are either compensating in effect or else on the conservative side, making conclusions drawn from data cited still stronger.

III. INTERPRETATION AND APPLICATION OF VITAL STATISTICS

We have already inferred that in most districts of the Region little or no use is made of these records after

[1] The cities include Aurora, Berwyn, Blue Island, Chicago, Chicago Heights, Cicero, Elgin, Evanston, Forest Park, Joliet, Maywood, Oak Park, and Waukegan in Illinois; East Chicago, Gary, Hammond, La Porte, Michigan City, and Whiting in Indiana; and Kenosha in Wisconsin.

collection. They are too frequently regarded as just another bit of bothersome red tape. They swell state and national totals, but for local purposes they might as well never be gathered. This is quite contrary to approved procedure, where local application is paramount, and where speed is of the essence of the problem.

> The health officer of a city or he whose duty it is to collect and record the vital statistics should study them as soon as received and not wait until some convenient day when work is slack and then merely tabulate and make averages for formal reports and permanent records. Vital statistics, especially those of morbidity, should be studied in the making, and just as the meteorologist reads his instruments daily in order to forecast the weather and give warnings of the coming hurricane, so the efficient health officer will daily study the reports of new cases of disease in order that he may be forewarned of an impending epidemic and take measures to check its ravages.[1]

Morbidity data obtain the attention of some of the regional health officers, but vital statistics rarely receive more than a passing glance. When township, city, or village clerks are registrars, the health officers seldom even see the data. When questioned they replied that "the clerk handles all that." One health officer interviewed said that it would be better if the Health Department itself collected such statistics, but in many cases where the health officer is also registrar his only concern regarding the records is that all legal requirements be fulfilled.

Local health officers serving practically without salary cannot be expected to make painstaking statistical analyses. Requests for specific mortality data are met by referring the investigator to huge stacks of original certificates, through which he might search, if he wished,

[1] Whipple, *op. cit.*, pp. 11–12.

for any item of information which might intrigue his fancy. Only three or four regional health departments make more than the most perfunctory analysis of the raw data. Chicago is pre-eminent in this field. Besides collecting the statistics, weekly summaries are drawn up for the use of the health commissioner, and published in the bulletin of the Department. Annual summaries are available in the Vital Statistics Bureau, and general reports are published from time to time, the last covering the three years 1923–25. An appropriation was made for publication of a report for 1926–27, and the material was ready for the printer when Dr. Bundesen was summarily dismissed as health commissioner. Nothing has since been heard of this report.

Among the municipalities, Evanston and Kenosha have published available material annually, and some others have the material at hand in the offices of the Health Department. But outside of three or four cases the use made of the reports is far below standards maintained in Chicago. Comment on the tabulation and use of records in the fifteen Illinois cities surveyed in 1926 was that "all of the 15 cities . . . . collect reports of births and deaths to a satisfactory degree of completeness but only five, Rockford, Springfield, Evanston, Oak Park, and Decatur, in the order named, utilize them to within 75 per cent of minimum requirements for reasonably accurate usage."[1]

The other three regional Illinois cities—Joliet, Aurora, and Cicero—were below even 75 per cent of minimum requirements, and stood sixth, seventh, and ninth, respectively. When cities of this size cannot compare with Chicago's effectiveness in this respect, what may we

[1] *Illinois Health News*, XIII, 212–13.

expect of the tiny districts of the Region? Even if they could afford elaborate analysis of the figures, they would represent so small a sample that the operation of chance would make them meaningless. We have already pointed out that Chicago could extend its facilities to cover the entire Region at a comparatively small added cost.

Of course, under the present system the four state health departments are expected to do the analytical work for the smaller jurisdictions. Each state department does publish a report in some form, but they are not comparable with one another, and there is a notable absence of interpretation. For instance, in the *Annual Report of the Illinois Department of Public Health for 1926–1927*, 220 pages are devoted to tables, page after page of figures, without discussion. On the other hand, there are 20 maps, charts, and graphs and less than 10 pages which could be properly described as analytical. The Chicago reports, when published, have a similar tendency, but they are subject to a day-to-day use which is obviously impossible in the case of the state statistics. We have heard of no case in which the figures collected and interpreted by the state departments have been made the basis for action on the part of local health authorities.

Why, then, must the records for the Chicago Region go to the four separate state capitals for consideration? The situation results in great legal inconvenience in that records required for use in the local courts in Chicago, for example, must frequently be subpoenaed from Springfield. There seems to be no good reason why the originals for the entire Region might not be kept and interpreted in Chicago, instead of being sent to Spring-

field, Indianapolis, Madison, and Lansing, respectively, as at present.

We must not pass by the notable analytical services of the federal Division of Vital Statistics at this point. It compiles life-expectancy tables, makes special studies of separate problems, and issues a weekly report of deaths occurring among the 30,000,000 people living in about 70 of the larger cities of the United States. Its reporting system for current morbidity is yet more elaborate, and will be discussed in a subsequent chapter. In this connection it is enough to note that the federal government and the city of Chicago are the agencies most alert to analysis of vital statistics and application of the results to current practice.

IV. SUMMARY AND CONCLUSIONS

What is the ideal machinery for the collection, comparison, interpretation, and application of vital statistics in the Region of Chicago? In the light of our investigation it would not appear that the existing system is in any respect ideal, but before we offer any suggestions for change a brief statement of our outstanding conclusions seems to be in order.

First.—There are too many small registration districts. This requires that the collection be done by ex-officio part-time registrars instead of by trained experts; the units are too small to permit comparison even if the figures gathered were properly comparable; and it is impossible for each of these units to analyze its statistics intelligently because this work requires expert knowledge and large samples.

Second.—The best work is done in Chicago and two or three other of the larger cities. Only Chicago main-

tains a Hearing Board and institutes prosecutions for repeated violations of the law; Chicago has expensive photostatic equipment that permits large savings in money and prevents error; Chicago allocates births and deaths to wards of residence; and Chicago has a trained staff capable of performing the technical tasks quickly and well. Most important of all, the facts gathered are used by the health commissioner in mapping the current health program from day to day and are more than matters of idle curiosity.

Third.—The presence of four states within the regional area is a seriously complicating factor. Four sets of vital-statistics law in force, four degrees of state-law enforcement, absence of uniformity in collection or publication of data, complete failure to comprehend the inherent unity of the vital-statistics problems of a metropolitan area, are among the results. When the figures for Gary and the rest of Indiana territory which clearly forms part of the Chicago Region are simply lumped with figures from the remainder of the state they lose their significance. Recent statistics covering the entire region are unobtainable in published form, although the remaining chapters of this study indicate that the Region is a unit in matters of public health just as in social and economic life. The four state capitals have taken no step to investigate through statistical methods the new and peculiar public health problems precipitated by the development and expansion of the mighty metropolis at the tip of Lake Michigan. They are too far removed, both in distance and in sympathy, to take more than a casual interest.

Fourth.—The value of the federal activities in the line of co-ordination, standardization, stimulation, and in-

terpretation merely serves to emphasize the needlessness of the state divisions of vital statistics. That is, state oversight would be needless if the entire Region were under the same organization as now exists in Chicago.

Finally, it would be eminently practical to group the entire regional population under a single vital-statistics control. The increased efficiency under such a system would result in improved collection; cheaper and more accurate filing of records; and, most important of all, a set of comparable records for the entire metropolitan community to be interpreted and applied by competent specialists. Apart from statutory or constitutional obstacles, the Chicago Bureau of Vital Statistics might extend its services to all the regional area with only a light strain.

We do not wish to imply by this statement that all phases of vital-statistics work should be centralized in one office. We do maintain that 215 primary registration districts is an excessive number, and that 10 or 20 could do much more competent work while still retaining valuable local contacts. Of course, these primary districts might put all their technical work through a central office. For instance, the existing Chicago machinery could be used in the copying of certificates and the Chicago technical staff might calculate and interpret the final results, for immediate action in the subdistricts. The central office might then send its final results to the federal vital-statistics office without the four state capitals acting as intermediaries in the transmission of figures covering what is, after all, a natural population and public health unit.

But such a radical reduction in the number of primary registration districts implies the need for a drastic re-

vision of all the direct governmental health machinery. The vital-statistics unit should coincide with the health unit, because the health officer should have statistics for his exact district constantly at his finger tips. There are about 331 direct health jurisdictions in the Region, so the further reduction in the number of statistics units would make the statistics gathered still less applicable by the local authorities than today, unless the number of direct health units were also reduced sharply.

Is it desirable to continue with our 331 health officers however? In the following chapters we shall examine each important phase of public health activity with this question in mind. As far as vital-statistics problems are concerned, it is eminently desirable in every respect to effect a drastic reduction in the number of units and to centralize in Chicago those functions which may be more efficiently performed there.

CHAPTER IV

CONTAGION

Public health work in the modern sense began with efforts to stop contagion. Epidemic diseases are now under firm control as compared with conditions fifty years ago, but this phase of public health work still makes the strongest public appeal. It is more spectacular to check a threatened epidemic than to campaign consistently against infant mortality, for example, although the latter may be just as important.

Control of contagion is a good index of governmental alertness for another reason. No one argues that it is "state medicine" for the health department to check the spread of an epidemic disease; everyone agrees that it is the business of "the government" to suppress contagion. This is not true for every activity which a modern public health department undertakes, but whatever else it may or may not do it must accept full responsibility for this work. Control of contagion is clearly a minimum public health function.

Moreover, the problem of communicable diseases is at its worst in a metropolitan area. There are tens and hundreds of thousands of daily contacts between the population of the congested central districts and that of the satellite (or parasite) communities. These close and constant contacts, this unusual mobility of population, makes the problem of contagion regional in scope. However, in the solid block of 95 municipalities surrounding Chicago, there are 95 separate health officers, and, theo-

retically, 95 administrations engaged in combating communicable diseases. Within our fifty-mile circle are 328 health officers, each independent of any other, but when a dangerous epidemic breaks out in any one of these jurisdictions it threatens lives in every other. Disease germs are no respecters of legal barriers; municipal boundary lines mean nothing to them.

I. MACHINERY OF CONTROL

Every one of our supervisory and direct health units is interested in this field, although the work many of them do is little recognized. For instance, the 57 quarantine stations maintained by the Public Health Service in Continental United States are a most effective bulwark against such diseases as Asiatic cholera and bubonic plague. The Service actually examines 3,000,000 passengers, seamen, and would-be immigrants each year. It also maintains a National Leper Home for the convenience of the states, conducts extensive research, and advises and encourages local authorities.[1] The discovery which eliminated yellow fever as a constant menace was made by a federal officer of the navy medical corps.

Each of the states maintains a division or bureau of epidemiology or communicable diseases. These organizations gather morbidity data for the federal government, and sometimes analyze such data themselves in an effort to check certain maladies. The Illinois Division has 16 employees who make investigations and quarantine calls, deliver lectures, etc. The small-town health officers are much in awe of the energy with which these state officers attack local problems in the rare cases when

[1] Troublesome cases of leprosy are taken off the hands of the state in this way. Chicago reported 9 cases and 1 death for the three years 1923–25.

they take charge of a situation. The Division also supplies antitoxins, vaccines, and the like to physicians and health officers of the state, generally without charge, and the State Division of Laboratories provides an excellent state diagnostic service.

The personnel of the Indiana Division seems to begin and end with the director. During the last year reported he investigated 9 epidemics, assisted in 1 local trachoma survey, inspected 5 venereal-disease clinics, attended club camps for boys and girls in 3 counties, and engaged in 1 local 12-day anti-spit campaign sponsored by a private organization; but none of these activities brought him into regional Indiana.[1] The Indiana state epidemiologist is unconnected with the foregoing division but does a similar type of work, mostly in connection with typhoid fever and diphtheria. The state laboratories are also available for diagnostic tests.

The Wisconsin Bureau concentrates on educational work, leaving direct activity to the deputy health officers in charge of the sanitary districts. These deputies make numerous special surveys and institute prosecutions for quarantine violations with considerable frequency. The state laboratory service is excellent, and one branch laboratory is located in the Region.

In Michigan a special bureau was created in June, 1924, for reasons set forth as follows: "The fact that public health administration in Michigan rests with part time, and often inefficient, village and township health officers instead of with centralized, full time county and district health departments, necessitates attention to local health affairs."[2] This statement indicates a situ-

[1] *Indiana Yearbook* (1926), pp. 664–67.

[2] Michigan Department of Health, *Fifty-third and Fifty-fourth Reports*, p. 77.

ation universal throughout the Region, outside of the larger cities. The local health machinery has failed; the states realized the failure and the need for reorganization, but have taken no adequate steps. The two Illinois counties with health departments have had to create them without statutory authority, and the only way they can act against contagion is to have the township supervisors deputize their employees within each township. Creation of authoritative county health departments has been actively urged by the Illinois Department of Public Health, but the state legislature has refused to take the step.

These state and county agencies fade into insignificance beside Chicago's Bureau of Communicable Diseases. The 1928 budget provided for 6 staff officers, 30 clerks, 62 part-time field health officers, 60 part-time school health officers, and 30 quarantine officers. Moreover, the city maintains a large contagious-disease hospital, an isolation hospital, an ambulance service, and a laboratory service of merit. Chicago spends about $800,000 a year in this work.

This organization is far superior to that of even the larger suburban jurisdictions. Comparable figures for 1925 reveal that whereas Chicago spent 24.3 cents per capita in combating contagion, all but 1 of the other 10 regional cities spent less than one-fourth this amount. Even if they should spend as large per capita amounts, they could not develop as well balanced a program on so small a scale. We shall now compare the programs in more detail.

II. THE MACHINERY AT WORK

The United States Public Health Service has a slogan which reads as follows: "No health department, state

or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring." Prompt and accurate reporting is the first step in any campaign against contagion. Although far from perfect on this score, the Chicago department stands much higher than most of the surrounding agencies. Thorough proof of this will be offered in respect to tuberculosis and venereal diseases in subsequent chapters. It is also true in the case of other communicable diseases, as the figures cited in a later portion of this chapter indicate, but the differences are less striking. However, the differences exist, and the Chicago department does make occasional gestures to force reporting by physicians.

In most of the other jurisdictions the morbidity reports are not made to the same official as the birth and death reports, and the districts are not identical in most cases. But these reports are made to the health officers at least, which is better than the system which sends vital statistics to the village or township clerk. The *Illinois Appraisal of 15 Cities* states that reports were incomplete in all cities, and that Evanston, Oak Park, Cicero, Joliet, and Aurora ranked first, third, fifth, twelfth, and fourteenth, respectively, which would suggest that the cities in closest proximity to Chicago were most alert in this regard. In the smaller units conditions are much less satisfactory.

Indiana law requires that all local officers report to the state health department, but its last annual report declares that "only sixty per cent of the health officers reported to the Division during the quarter. Perhaps this is due to the fact that about fifty per cent of the health stations have new health officers, beginning the

first of the year."[1] If the local officers are so careless in reporting to the state, is it to be expected that they are alert in gathering the reports in the first place, or in applying the information obtainable therefrom?

Actually, there is almost never any pressure to enforce reporting in the "rural areas," and reports turned in are entirely voluntary. In Wisconsin the local units are frequently so lax that they fail to organize for control of contagion, forcing intervention of the state department. Outside the larger cities it is simply a matter of common knowledge that reports are not made.

Moreover, there is general disagreement upon which diseases are dangerously contagious. Illinois requires reports of 51 separate diseases, Michigan of 43, Wisconsin of 25, and Indiana of 19. In statutes and rules covering quarantine, placarding, isolation, and terminal disinfection great variation also exists among the four states. Quarantine is uniformly required, however, for smallpox, diphtheria, scarlet fever, infantile paralysis, and cerebrospinal meningitis.

Enforcement of quarantine rules varies even more widely. In Chicago quarantine officers make over 100,000 visits annually, and there is a routine check to see that quarantine rules are being observed. But of the 15 Illinois cities appraised in 1925, Cicero was the only one of the 5 in the Region where the Chicago practice is followed. Elgin has a sanitary health officer who does this work rather effectively, but Joliet makes no routine check; Aurora gives the service only "if necessary," and the Hammond public health nurse makes such visits "once in a while." On the other hand, Kenosha and

[1] *Indiana Yearbook* (1926), p. 665.

Gary insist on visits to such cases at least once a week, and East Chicago nurses make such visits once or twice during the illness. In Oak Park the service is merely occasional, "because of the character of the population." In comparison with these nursing visits, in Chicago a Health Department physician visits every case of diphtheria or scarlet fever and inspectors visit all reported cases of whooping cough and measles. Nowhere else in the Region is this true.

In only two of the cities from 10,000 to 30,000 visited does a nurse make routine visits to contagious cases, even in theory. These are the only cities of this class with full-time health officers—Winnetka and Berwyn. Most of the part-time health officers solemnly stated that the rules for quarantine and placarding were followed closely, but if this be true it is not due to the energy and efficiency of the public health administration. The following statement reveals the general condition. "The family doctor reports cases and cares for them. If there is complaint the health department steps in.—Forest Park [population, 15,000; 2 miles west of Chicago]."

In the municipalities under 10,000 and in the rural areas there are no routine nursing visits to cases of contagion. In Illinois the township supervisor is quarantine officer as well as health officer in general, and puts up and takes down placards, if any. Conditions are scarcely any better in the small villages and towns, where the part-time health officer would lay himself open to charges of favoritism and unethical or unprofessional conduct were he to enforce the law on other practicing physicians. We will shortly have occasion to note the

results of this situation, in comparing current death-rates from contagion in these areas with those of Chicago and other cities of the Region.

In isolation and hospitalization procedure Chicago again stands out above the surrounding area. Smallpox, infantile paralysis, and epidemic meningitis are thoroughly isolated, and every case is hospitalized. Also, 75 per cent of all typhoid, over 30 per cent of diphtheria, and about 25 per cent of scarlet-fever cases are hospitalized. Moreover, all contacts are placed under observation—a practice rarely followed elsewhere in the Region.

In Evanston and Oak Park (thanks in the latter case to Cook County Hospital) there is quite good hospitalization. Aurora hospitalizes only a small proportion of diphtheria and scarlet-fever cases; Joliet hospitalizes only half of its smallpox even; and Cicero has no local facilities whatever. Of course, there are numerous "pest-houses" scattered over the Region, although maintenance of such facilities at more than half-a-dozen points in the Region is ridiculous. Establishment of modern equipment at a small number of central points would certainly be superior to present practice. An excellent ambulance service might even permit concentration of such cases at a single point. Chicago's two contagion hospitals already receive 3,000 cases annually. This same possibility will recur with added force in the subsequent chapters on tuberculosis and venereal diseases.

Terminal disinfection by gaseous fumigation is still standard practice in large areas of the Region for smallpox, diphtheria, scarlet fever, and the like, although it is no longer recommended by the best health authorities for any but insect-borne diseases such as malaria, yellow

fever, plague, and typhus fever. As a matter of fact, the principal or only public health expense of many jurisdictions of the Region is for gaseous fumigation. Chicago now accomplishes terminal disinfection by "airing and scrubbing"; Evanston, by "elbow-grease"; Gary, by "sunshine and fresh air"; and Kenosha, by "chemical means." East Chicago, Hammond, Cicero, Oak Park, and Joliet, however, still conduct a formaldehyde fumigation, although the last-named city's Health Department is "educating the population up to elimination of this measure." Time and effort spent in this outworn rite is worse than wasted, as a false sense of security may result.

Chicago requires laboratory tests before lifting quarantine on typhoid fever or diphtheria, and sometimes on scarlet fever. Answers to the query concerning which diseases had to be checked by laboratory tests before release brought the reply in Elgin, "scarlet fever and poliomyelitis (infantile paralysis)"; in Joliet, "poliomyelitis"; in Aurora, "open tuberculosis"; in Oak Park, "tuberculosis and some cases of scarlet fever." Gary, East Chicago, and Hammond require such tests for diphtheria only. In many jurisdictions no tests are required at all.

This matter is important because persons who have recovered from typhoid fever or diphtheria may continue to be "carriers" of the disease germs and so expose those with thom they come in contact. The laboratory tests permit Chicago and the cities using similar methods to detect these carriers before release from quarantine in many cases. Chicago even tests each intimate contact of typhoid and diphtheria cases in a search for carriers, but this is almost never true in the smaller

units. Aurora, Joliet, and East Chicago report no efforts to discover carriers; Oak Park and Cicero made non-committal replies as far as routine procedure goes; Hammond "finds some occasionally"; and Elgin quarantined two over a two-year period. Only Gary, Kenosha, and Evanston report systematic efforts in this direction, and the methods in use vary widely.

Similar confusion of effort exists in the minor jurisdictions, when anything at all is done in this direction. Maywood searches for carriers "in families where there is diphtheria"; Waukegan checks up on dairies; Berwyn investigates "where over two cases develop in the same schoolroom." These measures are all good and should be applied universally instead of in scattered instances. In some of the smaller cities the question regarding carriers brought the reply, "We have no typhoid," the health officer apparently assuming that typhoid fever is the only disease thus transmitted. The fact is that most health officers do not perceive the possibilities in modern control methods. Even in cities of over 10,000 inhabitants there is a lack of co-ordination and direction, an absence of a constructive program which a regional health organization could supply.

Another instance of this is found in vaccination and immunization work in the Region. While Chicago health authorities vaccinated 125,000 persons and distributed 215,000 vaccine points per year for the last period reported, conditions elsewhere varied. Aurora reported only about one-third of the population vaccinated as compared with a high percentage in Elgin and Joliet. In Oak Park 60 per cent of the school children have been vaccinated; in Cicero, 98. In the other larger cities definite statements were not made, but in the

group of from 10,000 to 30,000 the percentage of children vaccinated was reported as "probably" 80 to 90 in Maywood, 75 in Berwyn, 95 in Forest Park; and Whiting reports that every child was vaccinated in 1926. Elsewhere answers were so indefinite as to infer either that conditions are bad or that the health officers do not know conditions.

In the minor jurisdictions vaccination is perfunctory, except under epidemic conditions. A few health officers even agree with one who said, "We urge vaccination, but by the family doctor. We broke up the practice of free vaccination to prevent pauperizing the school-children." These guardians of the Region's health seem to think disfiguration or death for the children of their own or neighboring cities preferable to their "pauperization."

Immunization against diphtheria is now generally accepted as part of a modern health program, and alertness in adoption of it should provide a good index of public health efficiency. Chicago health authorities gave 28,000 injections in 1923; 38,000 in 1924; 45,000 in 1925; and in 1927 conducted an intensive campaign culminating in 132,000 injections. This is not so good a record as it appears, because 2, 3, or 4 injections are required per person; but even so it is far ahead of the general average throughout the Region.

The 1925 *Illinois Appraisal* notes that Evanston's Health Department was the only one among the 15 cities carrying out a program for immunization of children against diphtheria. By 1927 Evanston had immunized over 6,000 children, and Aurora had followed with 3,800, but in the other regional Illinois cities of this group immunization was carried on, if at all, by family physicians. While Gary immunized thousands of chil-

dren in 1926 the rest of regional Indiana is far behind in this work. Incidentally, Michigan City with one-fifth Gary's population had five times as many diphtheria deaths in 1926. Hammond and Kenosha "advise" and "recommend" immunization, respectively.

Berwyn is the only shining example among the cities in the second population group. The Schick test was administered there to all children whose parents would consent in 1924–26. Elsewhere the work depends on the family physicians, with little or no interest displayed by the public authorities. Even Winnetka had not yet begun treatment in the summer of 1927. As for the little villages and towns and the townships, nothing of this sort is thought of, much less done. Probably a large percentage of the supervisors acting as ex officio health officers have never heard that children may be immunized against diphtheria just as they may be vaccinated against smallpox.

Part-time health officers of the smaller jurisdictions are very prone to discuss previous epidemics of contagion and the means they used to suppress them. If they would concern themselves more with modern preventive measures there would be fewer epidemics to suppress. An ounce of prevention will save more lives than a pound of cure.

Throughout this preliminary analysis of anti-contagious disease activity in the Chicago Region, it seems to be universally true that the Chicago Division of Communicable Diseases maintains standards measurably above the average of other regional cities, and far above those of the surrounding rural areas. In almost every case a few other cities will compare favorably with Chicago, but the majority are noticeably below. It is rare

for even one to stand above Chicago in any respect. For example, only Evanston maintains as complete and graphic a set of spot maps for contagious diseases as does Chicago. Cicero, Oak Park, Kenosha, and East Chicago keep some maps; Aurora keeps them in times of epidemic; and Elgin, Joliet, Hammond, and Gary keep no maps, either for location or for time of onset. Of the smaller jurisdictions visited only Winnetka followed the Chicago practice.

We have tried to give a sketchy picture of contagious-disease control by public health authorities of assorted varieties in the Region of Chicago. Our conclusions have been obvious throughout. Upon the basis of the facts available Chicago's control measures are better than those of the smaller cities, which are in turn far superior to those of the minor jurisdictions. But practical results are more important than abstract argument. Therefore we turn to a consideration of the statistics concerning the more common communicable diseases, to see whether these variations are reflected in the morbidity and mortality statistics of the Region.

III. THE RESULTS

In any attempt to compare public health methods in Chicago with those of surrounding areas statistically, several important facts must be kept in mind. First of these is that Chicago's population is much more congested than that of any outlying district. In the course of a normal day's activities the average inhabitant of the Region's hub makes contact with more persons than the average suburban resident. Moreover, overcrowding and poor housing conditions which exist in parts of Chicago are not paralleled anywhere else in the Region. There are usually larger opportunities for fresh air and

sunshine in the outer areas. We have already noted that Chicago has a proportion of foreign-born 37 per cent and of negroes 170 per cent higher than the remainder of the Region. Each of these conditions places Chicago under a severe handicap in comparison with the other districts. Health-control methods being equal, Chicago's illness- and mortality-rates should be higher because of these factors.

In the following statistics we have sought to guard against chance variations to the best of our ability. Fearing that any single year might not represent a fair index, figures covering a four-year period were obtained and the average rates computed in each case. For the Illinois units the data are for the four fiscal years ending June 30, 1926; and for all other units the four calendar years 1922–25 were used. Population estimates are based on the United States Census method of straight-line expectation. This is considered to be relatively reliable since such large groups are combined for this purpose, and since January 1 and July 1, respectively, of 1924 are the middle dates of the period considered and are not far removed from the actual date of taking the last census.

The morbidity-rates must be accepted with much more caution than those of deaths, because the reporting is completely unstandardized. The United States Public Health Service has been urged to establish a morbidity registration area similar to those for births and deaths, but it does not care to approve the standards now in vogue anywhere in the country. No morbidity data whatever were available for Indiana, so all such figures are for the districts outside that state. All rates express cases or deaths per 100,000 population.

When reference is made to "other cities," all municipalities of 10,000 population or over within fifty miles of the State-Madison intersection are included. The "rural areas" include all smaller municipalities within the circle and all unincorporated areas as well. Since it is impossible to obtain figures for the exact circle, it was necessary to include those "rural" portions of the 16 counties all or partly within the Region in our figures, but data for all cities outside has been subtracted. In many cases figures were not available in published form and were provided by the courtesy of the state health departments. The elaborate work-sheets and cross-tabulations from which the final rates were computed have been eliminated from the text to save space and to concentrate attention on end results. On the whole, and considering all factors, we believe that the computed rates are reliable and indicative. When there is probability of error it is on the conservative side and merely serves to reinforce the deductions we have drawn.

The seven diseases we have selected for special consideration are those generally regarded by epidemiologists as most indicative of alertness of health authorities. Malaria and cerebrospinal meningitis were omitted because of the difficulty of obtaining a complete set of data and because the number of cases and deaths is insignificant. Rates for pneumonia and influenza are appended, although methods of coping with these diseases are not yet well standardized as in the other cases, making it difficult to judge public health control by that means.

a) TYPHOID FEVER

It has been well said that for each case of typhoid fever someone should be hanged. This disease may be

checked more effectively than many others by efficient governmental action. Incidence of typhoid fever is an excellent index of municipal sanitation. A subsequent chapter deals with the measures Chicago has taken to protect its water supply, and the absence of equivalent protection in the surrounding jurisdictions. Moreover, since Chicago hospitalizes 75 per cent of all cases, requires laboratory tests prior to release, and has many carriers under constant supervision, the facts revealed in Table I are only to be expected.

TABLE I

	Morbidity	Mortality
Chicago	10.46	1.58
Other cities	22.94 (excl. Ind.)	4.41
Rural areas	17.70 (excl. Ind.)	2.20

Combining the cities and the rural areas, the average death-rate is 3.34 per 100,000 population—more than double the Chicago figures. The combined morbidity-rate, exclusive of Indiana, is 20.01, or practically twice that of Chicago. Conditions in Indiana are especially bad, the death-rate of 5.11 being more than triple Chicago's. This is probably due in large part to sanitary conditions discussed in subsequent chapters. The very marked difference between Chicago and the surrounding areas is in spite of two epidemics of unusual proportions which occurred in that city during the period covered. Chicago's typhoid death-rates for 1926 and 1927 had further declined to .79 and .74, respectively, and a more recent comparison would be even more impressive.

b) SMALLPOX

If modern control measures were universally applied this dread scourge which once killed nearly one-fourth

of all persons born might be wholly wiped out. Therefore its control is a fair index of alertness, although smallpox is now a factor of only potential importance (see Table II).

Chicago's routine program of vaccination for all children in the kindergarten and first grade whose parents consent, and revaccination after five years with the same condition, seems to have borne good fruit. The comparison would be still more favorable to Chicago were it not for its large negro population, which furnishes about 75 per cent of all cases. Aside from these cases, Chicago's morbidity-rate would be less than 3 per cent of the combined outside rate of 37.64 per 100,000. Even including them, Chicago's death-rate is far less than half that for the surrounding areas.

TABLE II

	Morbidity	Mortality
Chicago	3.80	.14
Other cities	47.91 (excl. Ind.)	.37
Rural areas	29.57 (excl. Ind.)	.25

* Chicago death-rates based on information obtained direct from the Health Commissioner. The published state report is slightly in error.

Case reports were not available for Indiana for all the four years taken, so they could not be used in the comparative Table II, but they are available for 1925–26, and reveal an incidence much higher than that for the other "outside" districts, the rate being 83.24 cases per 100,000 population. Chicago's accomplishment appears all the more remarkable because contagion is harder to control in congested sections. Average conditions in the remainder of the Region clearly suggest the need for application of the Chicago program throughout.

c) DIPHTHERIA

Of the seven diseases chosen diphtheria is the greatest destroyer of life, although it need be no more prevalent than smallpox were known methods universally applied. In comparison with other large cities Chicago has been backward in applying the toxin-antitoxin immunization procedure, but we have already noted that the remainder of the Region has been even slower to adopt a practice now generally accepted as standard.[1] An examination of the figures in Table III reveals the effects of regional conditions.

TABLE III

	Morbidity	Mortality
Chicago	149.70	9.98
Other cities	146.73 (excl. Ind.)	11.02
Rural areas	118.46 (excl. Ind.)	10.75

Chicago's showing is even better than it seems, for diphtheria makes its greatest inroads in congested cities.[2] Considering natural advantages, the figures for the "rural areas" would indicate poorest health control of all; and the difference between Chicago and "other cities" is also emphasized by this factor.

Part of the difference may be due to the fact that in the two years ending June 30, 1926, Chicago located 5,159 diphtheria carriers as compared with 322 in all the rest of the state of Illinois. This differential indicates the vast difference in control methods used in Chicago

[1] Gerstley, Geiger, Falk, Abt, Grulee, and Norton, "Survey of the Communicable Disease Situation in Chicago," *American Journal of Diseases of Children*, XXXV (June, 1928), 1085.

[2] For example, recent Wisconsin records show a death-rate of 10 for cities over 50,000; 6.2 for cities from 5,000 to 10,000; and 3.8 for rural area.

as compared with those in its environs. Moreover, 40 per cent of all cases are hospitalized in Chicago, half of them in the Municipal Contagious Disease Hospital, and the percentage is constantly rising. Altogether, diphtheria control administered by the Chicago Health Department might very profitably be extended to the entire metropolitan area.

d) SCARLET FEVER

Immunization methods in this case have not advanced beyond the experimental stage, and the only reliance of the health authorities is upon complete isola-

TABLE IV

	Morbidity	Mortality
Chicago	169.77	3.53
Other cities	308.43 (excl. Ind.)	3.39
Rural areas	284.33 (excl. Ind.)	3.86

tion and increasing hospitalization. The best authorities state that scarlet fever is twice as prevalent in the city as in the country. Since it is not so highly infectious as some other diseases and requires more frequent contacts for communication, it is at its worst in thickly populated sections (see Table IV).

This is the only one of the seven diseases where the Chicago mortality-rate is higher than that for the other regional cities. Even here the Chicago rate is lower than that of all other regional area, combined, which was 3.62. If Chicago were only able to hold even with the outlying areas in scarlet-fever control, it would be a triumph for the great city. Moreover, Chicago has continued to reduce the death-rate for this disease, for it stood at 2.59 and 2.48 in 1926 and 1927, respectively,

although it is unknown what part of this is due to lessened virulence of the disease and what part to public health activity.

It is true, however, that in 1926 the proportion of cases hospitalized in the Municipal Contagious Disease Hospital was the highest on record, as 1,153 of the 4,948 cases reported were treated there. This proportion of cases hospitalized in municipal hospitals is much higher than prevails elsewhere in the Region. The lower morbidity-rate encountered in Chicago cannot be certainly explained. It may mean either that the disease is less prevalent but more fatal in the congested city or that case-reporting is less complete there. On the whole, these figures reinforce our conclusions in the case of the other diseases, although they are not so striking at first glance.

e) MEASLES

Almost everyone acquires this disease at some time or other, but it is rarely fatal except among young children. Of all deaths from measles 90 per cent occur among children under six years, so protection of this group is the principal duty of the health officer. Since everyone has measles eventually about all the authorities can do is to seek to prevent the spread of the disease in the middle of winter, when resistance is generally lowered and complications are more probable, and to protect young children. This latter may be accomplished by a temporary immunization of infants exposed, through use of a "convalescent serum" now developed but not yet available in large quantities (see Table V).

Since nothing but routine methods are pursued by the Chicago Health Department, it is difficult to explain Chicago's superiority. Nevertheless, the mortality was

less by 22 per cent than that for the remainder of the Region combined, and had made a further decline to 1.83 and 3.96 in 1926 and 1927, respectively. Since complications and deaths occur more frequently in con-

TABLE V

	Morbidity	Mortality
Chicago	348.23	4.65
Other cities	872.77 (excl. Ind.)	7.96
Rural areas	564.90 (excl. Ind.)	3.94

gested districts, it is easy to understand why the other cities show a rate of double that of the "rural" jurisdictions. The surprising fact is Chicago's low rate. Conditions in the Indiana, Wisconsin, and Michigan portions of the Region were especially bad.

f) WHOOPING COUGH

Pertussis is known as the "baby-killer." In 1925 and 1926 it cost as many lives in this country as scarlet fever and measles together. This disease differs from the others in this group in that it has been found to be 15 per cent less deadly in city than in country, on an

TABLE VI

	Morbidity	Mortality
Chicago	132.14	4.64
Other cities	358.61 (excl. Ind.)	6.41
Rural areas	195.73 (excl. Ind.)	4.57

average throughout the United States. Contrary to this expectation, however, both Chicago and the other cities show rates higher than those of the distinctly rural districts, although the Chicago rate is very noticeably less than that of the other cities. The exact figures are listed in Table VI.

Thus Chicago's rate of 4.64 is more than 15 per cent less than the rate of 5.50 for the rest of the Region combined. Control measures resemble those in the case of measles, although efforts are now being made to develop a vaccine. The facts in this case do not seem to indicate anything very clearly, although the lower death-rate in Chicago, taken together with similar conditions in all other diseases, may be taken to mean a great deal.

g) INFANTILE PARALYSIS

Poliomyelitis is comparatively rare, but demands special precautions to prevent development of epidemic conditions. Here, again, the Chicago rates are considerably less than those for the remainder of the Region (see

TABLE VII

	Morbidity	Mortality
Chicago	2.55	.23
Other cities	3.13 (excl. Ind.)	.61
Rural areas	3.38 (excl. Ind.)	.48

Table VII). The disparity may be explained in part by the fact that 186 of the 219 cases reported in Chicago in the three years 1923–25 were hospitalized. Most of the part-time health officers of the Region did not seem aware of the fact that a serum has been developed recently for which strong claims are made.

h) RECAPITULATION

Much more significant than any one of these examples in itself is their striking similarity. We could not place great reliance upon the figures for a single year or for any one of the seven maladies over a four-year period. But when the average for each of seven diseases is taken over a four-year period, with results almost identical with each other important communicable disease, the

findings are of paramount importance. When Chicago, despite natural handicaps, shows a death-rate lower than that for the remainder of the Region in every single case, there must be some potent factor at work. These facts cannot be assigned to coincidence or happenstance. Combining the death-rates for the seven diseases, we obtain the results shown in Table VIII.

TABLE VIII

	Mortality
Chicago	24.74
Other cities	34.18
Rural areas	26.09

Thus for the seven most communicable diseases of virulent nature, aside from tuberculosis and venereal diseases, the Chicago rate is over 30 per cent below that of the other regional cities. While we would expect much lower rates in the rural areas than in Chicago due to their natural advantages, the opposite is actually true.

Although we have already stated that there are so many variable and confusing factors that consideration of separate cities, except for Chicago, is not particularly profitable, we list in Table IX the average rates for the four-year period for all seven diseases combined for the other regional cities.

TABLE IX

	Mortality		Mortality
Chicago	24.74	Chicago Heights	63.09
		Waukegan	37.04
Gary	60.68	Michigan City	31.84
Cicero	24.96	Berwyn	29.16
Oak Park	13.69	La Porte	16.11
Kenosha	31.55	Maywood	16.14
East Chicago	39.61	Blue Island	40.42
Evanston	25.05		
Hammond	45.60	Forest Park	9.84
Joliet	31.10	Whiting	34.46
Aurora	36.75		
Elgin	18.18		

Of the 10 cities over 30,000 population only 2 have lower rates than Chicago, and only 3 of the 9 cities between 10,000 and 30,000 population show more favorable rates. While we cannot rely too heavily upon isolated cases, these results are sufficiently uniform to merit consideration. In this connection it is interesting to compare the scores of the 5 regional cities in respect to control measures against contagion given in the 1925 *Illinois Appraisal of 15 Cities* with the combined mortality-rates of these same 5 cities according to Table X.

TABLE X

	Score	Mortality-Rate
Evanston	143	25.05
Oak Park	115	13.69
Cicero	106	24.96
Joliet	86	31.10
Aurora	82	36.75

Thus the 5 cities rank in exactly the same order in control measures as in combined death-rates for the seven communicable diseases, with the sole exception of Evanston. Evanston has an excellent communicable-disease hospital used freely by persons outside that city, and also has a growing negro population.

The 5 regional cities with lower rates than Chicago include Maywood, Oak Park, and Forest Park—all in a residential section far above the Chicago average. Of the other 2, Elgin has a sanitary health officer who made 4,659 communicable disease calls in 1926—an unusually large number for that size city. Thus every available bit of data points to the conclusion that case- and death-rates for communicable diseases depend upon public

control measures, and that Chicago maintains far better than average regional standards in this respect.[1]

IV. CONTAGION IS A REGIONAL PROBLEM

It is freely, indeed eagerly, stated by public health officers that the source of this or that epidemic was outside their jurisdiction. As for the exact location of the source, these officials argue that it is hard to trace the infection beyond the borders of their legal power. As some of them said, "Why should we? Our authority stops there." The idea of collaboration throughout the entire Region in a common prevention program seemed new to them.

The existing situation allows each city health organization to blame neighboring cities for local conditions, and rather plausibly too. As the health officer of Berwyn said, "Contagion sweeps out from Chicago in waves. It strikes Cicero (between Chicago and Berwyn) first and the curve there rises rapidly. By the time the curve begins to rise in Berwyn it is going down in Cicero." It is the same epidemic all over the Region, but the right to fight it is divided among 328 local health officers, each of whom may blame the others for a general failure. And while epidemics may sweep out of Chicago into

[1] Figures for influenza and pneumonia are not cited in the body of the discussion because, as was stated, control measures are not standardized and it is hard to say just what is the proper procedure. Chicago has been devoting considerable attention to these diseases, however, and better standards of reporting and supervision maintain there than in the remainder of the Region. It is interesting to note the rates for these diseases combined however.

	Morbidity	Mortality
Chicago	403.81	118.16
Other cities	261.50 (excl. Ind.)	140.42
Rural areas	193.99 (excl. Ind.)	109.07

the suburbs, they frequently develop first in some one of the suburbs, so that Chicago is menaced on all sides.

Whiting blames Hammond for a smallpox epidemic; Hammond blames Chicago. Forest Park blames Oak Park, which blames Chicago. Yet Chicago might better blame the parasitic satellites—their death-rates are higher than her own. The fact is that the interests of each in this matter are the interests of all. They face a common problem without a common program. The same forces properly organized might be twice as effective.

There is a certain degree of voluntary co-operation, of course, mainly due to the instigation of the Chicago Health Department. The latter sends its weekly report on communicable diseases to all neighboring jurisdictions willing to co-operate. Chicago is confronted with the gravest situation, with sixty to sixty-five miles of boundary to protect against contagion, but not many of the nearby jurisdictions have shown any tendency to help. About the only other measure of regional co-operation in this field consists of occasional telephone conversations between health officers who are personally acquainted.

Any one source of infection menaces every part of the Region. That Gary had an average death-rate from the seven communicable diseases of 61.04 is not a fact of purely local interest; it has a vital importance to the entire Region. It puts an added burden on every other regional health department. Yet none of the neighboring jurisdictions has a proper legal objection, or any right to interfere. Legally, it is nobody's business if Gary or any other city uses poor methods of control to the detriment of the whole metropolitan area.

V. CONCLUSIONS

The ill-equipped, untrained, part-time health officers of the Region have failed to maintain standards of contagion control comparable with those of Chicago. This is true in case-reporting, control practices, hospitalization, discovery of carriers, methods of terminal disinfection, vaccination, and immunization, and is established beyond any reasonable doubt by the death-rates recorded. The ability of the large centralized health organization to do the work is conclusively demonstrated.

There is no balance to the average program of the minor unit, if it could properly be termed a program at all. What energy is spent is not employed to best advantage. Many of the officers who take their tasks at all seriously have some foible, a mania to check some one disease, almost to the complete exclusion of interest in other matters quite as important. Intelligent direction is lacking. There should be a regional program in force to cope with a problem so clearly regional in scope. Conferences and contacts between health officers, no matter how superior to the present unconcern, cannot offer a complete solution. Such measures are palliatives merely; they do not constitute a cure. The situation demands centralized authority, centralized responsibility, centralized control.

CHAPTER V

TUBERCULOSIS

In the preceding chapter only such diseases were discussed as might properly be termed "contagious" or epidemic. We now turn to the two great endemics, tuberculosis and syphilis. Each destroys many times as many lives each year in the Chicago Region as all seven of the common contagious diseases combined. Because they are the two greatest single problems of the health officer, they deserve special attention. Therefore separate chapters are assigned to their consideration.

According to the best estimates, the annual money cost of tuberculosis to the Region is between twenty and thirty-five million dollars. The "great white plague" attacks chiefly persons in the prime of life—the age group producing current wealth for the community. Among males the greatest number of deaths occurs at the ages of twenty to thirty-five, and among females at ages of twenty to twenty-five, with the maximum rates at the ages of twenty-five and twenty, respectively. Tuberculosis causes 30 per cent of all deaths of persons between the ages of fifteen and sixty.

But the lives taken do not measure the costs of tuberculosis. For every death there are from 5 to 10 active cases in the community, and the efficiency of each victim is impaired. The onset of tuberculosis is insidious, and its chronic nature permits it to place thousands of persons beyond hope of recovery without their knowledge. In 1920, 3,869 persons succumbed to the disease within

our Region; in 1926, the number was 3,701.[1] Because of the large number of sanitariums in the Region the failure to allocate deaths to place of residence makes death-rates per 100,000 more than usually dubious, even for large groups of population. For 1920 and 1926 the rates were as shown in Table XI.

The decline of the combined regional death-rate was from 100.7 per 100,000 population to 85.6. This is in line with a trend throughout the United States at large, in striking evidence ever since 1870. Numerous factors have been responsible for this result, but no one knows

TABLE XI

	1920	1926
Chicago	97.2	83.2
Other cities	65.6	49.9
Rural areas	150.0	136.4

the exact importance of any one. What part public health activity may have had in attaining this reduction in mortality is most important to this study, so we quote the leading authority on this point at some length.

It may be due to better food supply at all seasons of the year, brought about by improved methods of transportation, and the general use of refrigeration and canning; it may be due to ameliorations of the social and domestic life; it may be due to better hygiene and sanitation; or it may be due in part to the special anti-tuberculosis measures. It may also be due to self-protection which is more intelligent in general, early and accurate diagnosis, segregation even though imperfect; the pasteurization of milk; improvement in the health of dairy herds; correction of undernourishment in school children; the child hygiene movement; the fact that predisposing

[1] The 1920 figure was not obtainable for Illinois, so the fiscal year 1920–21 was used. This is taken into account in computing rates in the subsequent Table.

diseases such as measles, whooping cough, typhoid fever and others are less common, also plays a part. On the other hand, the decline may not have been influenced by any of the usually assigned causes, but may be a biological phenomenon indicating a falling off in the virulence of the tubercle bacilli, or, what seems less likely, an increased resistance owing to specific immunization of the population. During recent years, there has already been a lessened mortality, but apparently an increased morbidity. In other words, the infection seems to be more prevalent, but the disease less fatal.[1]

Whatever factors may have participated in producing the present situation, Dr. Rosenau believes that such aggressive measures as compulsory isolation will eventually be necessary to establish complete control. The effectiveness of intelligent public health control can no longer be questioned. In the Framingham, Massachusetts, experiment an intensive campaign over a period of years reduced the death-rate from 121 to 53.6 per 100,000; and careful search for foci of infection in the Sears Roebuck plant resulted in a 90 per cent reduction of the tuberculosis death-rate among employees.[2]

Since there are from 1 to 2 open cases of tuberculosis, that is, cases in a dangerously infectious stage, for each annual death in a community, there are probably from 4,000 to 7,000 such cases in the Chicago Region. Each of these is a focus for infection, and complete suppression is possible only through concerted community action. Hence, full responsibility for protection of the public rests upon "the government."

But it has already been pointed out that in the Chicago Region no such thing as "the government" exists.

[1] Milton J. Rosenau, *Preventive Medicine and Hygiene* (New York: D. Appleton & Co., 1927), p. 178.

[2] Harry H. Moore, *Public Health in the United States* (New York and London: Harper & Bros., 1923), pp. 93 94; also Eugene L. Fisk, *Health Building and Life Extension* (New York: Macmillan Co., 1923), p. 117.

Instead, there are 326 local units, 7 supervisory units, and 17 *ad hoc* governments, with the public health activities supposedly distributed among them. Control measures against tuberculosis do not center in any one of these governments, or in any class of them. The division of responsibility is classic.

The various state legislatures have recognized that the traditional public health organization is incapable of coping with so widespread a problem, and have sought to improve the situation by permitting establishment of *ad hoc* governments. Before going farther in this discussion of tuberculosis control perhaps we had best describe these organizations in some detail.

I. THE SPECIAL MACHINERY OF GOVERNMENT

The foremost of these special agencies is, of course, the City of Chicago Municipal Tuberculosis Sanitarium. The first special campaigns against tuberculosis were not under the auspices of public health authorities, but were humanitarian efforts supported by private philanthropy and sustained through charitable channels. But in 1915 the Chicago Tuberculosis Institute, a private organization, persuaded the state legislature to permit the municipality to assume responsibility for its strictly anti-tuberculosis functions in Chicago. Since additional funds were not available to the city at current rates of taxation, a new local government with special taxing powers was established, sanctioned, of course, by a referendum vote.

The new district was made precisely coterminous with the city; Chicago's mayor appoints its Board of Directors, and the Chicago Council approves the annual appropriation. There is no connection between the

secretary of the Sanitarium and the city health commissioner except through the mayor, who appoints the commissioner and the Sanitarium Board, which in turn selects the secretary. Co-operation between the two organizations thus depends upon the personal relations of these officials, and these relations are sometimes far from cordial. Complete co-ordination of effort is obviously impossible, even when active hostility does not exist.

Under such conditions, the Chicago Health Department can in no way be held responsible for the local tuberculosis situation. Responsibility for that phase of health work is placed upon the Sanitarium staff, which has, during the years 1915–29, inclusive, had $29,218,-293.91 placed at its disposal. Despite these huge expenditures, the separation of the Sanitarium from control by the Health Department has made possible the greatest obscurity concerning details of its operations. At one time the Sanitarium officials even refused information to the Finance Committee of the City Council, which is expected to approve its appropriation ordinance, making it necessary to send a police squad to commandeer the records by force. A former chief executive of the Sanitarium committed suicide while in office, apparently influenced by facts in connection with his official position. Of more than one hundred public health administrators interviewed during the investigation, the present Executive Secretary of the Sanitarium was the only one who refused to supply data at his command.

The annual budget for maintenance and salaries of the Municipal Tuberculosis Sanitarium has risen practically without a break from $1,466,960 in 1922 to $2,310,000 in 1929. With these very large sums at its

disposal the organization maintains a Sanitarium with about eleven hundred beds, has eight dispensaries at various points in the city, offers clinical services, supplies physicians and nurses for examination of school children, provides a public health nursing staff, and conducts research. The results obtained will be discussed subsequently in the chapter.

The Sanitarium serves only Chicago, however. More recently, similar sanitariums serving the entire county have been established in Kenosha County in Wisconsin, in Lake County in Indiana, and in Kane and Will counties in Illinois. They do not operate on anything like so grand a scale, but the results achieved with the funds spent are noted elsewhere. Cook County also maintains a tuberculosis sanitarium at Oak Forest, southwest of Chicago, where many advanced cases are taken, and the Cook County Hospital, located in the city, has a large tuberculosis ward. The Lake County, Illinois, General Hospital has a ward for tuberculous patients also.

Otherwise, about the only public agents actively employed in checking tuberculosis are the school and county nurses, who frequently attack this problem only incidentally. There are, however, philanthropic organizations at work in practically every county. The Chicago Tuberculosis Institute, for instance, continues its anti-tuberculosis work, but outside of Chicago. In the remainder of Cook County it maintains 18 health centers, with 28 field nurses at work. It also employs a full-time tuberculosis clinician, a full-time laboratory technician, a supervising nurse, and 5 health-center clerks. The Evanston Health Department co-operates actively with the Institute, but in general the municipalities al-

low the private organization to carry the whole load. The Cook County and Du Page County health departments do a great deal of work calculated to check tuberculosis also, but none of the minor jurisdictions in the Region gives the problem attention. All but two townships, and all but a very few of the larger cities and villages, do nothing.

Turning now to public health activities intended to control tuberculosis, we find that they fall under three heads, as Dr. McCombs points out. These are registration of cases, isolation and treatment when necessary, and better health education and practice. The work of the various agencies in each of these directions will be considered phase by phase.

II. CASE-FINDING

Case records are important because tuberculosis is usually contracted through long exposure—through intimate contact with an active case over a period of time. Members of a family which has an open case of tuberculosis are about twenty-five or thirty times as likely to have the disease as persons selected at random. Hence it is essential that each active case be located and instructions given, disobedience to which will lead to complete isolation. Thus the quality of the case-reporting system is a good index of the alertness of the health authorities.

Each of the regional states requires reporting of tuberculosis, either by statute or by administrative rule. The Illinois rule requires every physician, attendant, laboratory, parent, householder, or other person having knowledge of a case to report it within twelve hours.

But with the existing health machinery this is simply impossible of enforcement. Thus the rule continues:

> If the municipality has no health officer, reports must be made to the mayor of the city, president of the village or the official designated by ordinance to receive the same.
>
> Cases occurring in the territory outside the limits of a municipality must be reported to the person designated by the rules of the township or county board of health to receive such reports, or, if there be no such persons designated, reports must be made to the supervisor of the township. . . . .[1]

But who imagines that such officers, casually detailed to receive the reports, will diligently prosecute those who fail to make them? And if they do not enforce the law, who will? And if a patient is attended by a physician in another jurisdiction, to whom should the physician report the case? In most such cases he reports to no one, unless the authorities are particularly alert. Many tuberculous persons are treated by Chicago physicians although their place of residence is elsewhere in the Region. When the Chicago Department receives such reports it does not notify the outside jurisdictions, so the Chicago records are merely confused thereby, and the data rarely reaches the local health authority of the patient's residence. Even if the physician wished to report to the proper official, he would not know his name. And what of the thousands of cases never treated by a physician?

The other three states have stringent statutory requirements about reporting, but unfortunately these do not by any means insure compliance. If the rules are to be enforced, the local authorities must bear the responsi-

[1] Illinois Department of Public Health, *Rules and Regulations for the Control of Tuberculosis* (July 1, 1927), Rule II, Part I, secs. *a* and *b*.

bility. Upon the efficiency of their efforts depends the success of the reporting program.

In the past Chicago had an excellent record of case-reporting. In 1923 it reported 4.3 cases per death, as compared with an average of 2.11 for the 100 largest cities in the United States that year. Let us also note that at the same time Chicago had a lower death-rate than any other city over 500,000. Since then, however, the ratio of cases reported per death has suffered a sharp decline, reaching a new low point for 1928. There are supposed to be about 8 or 10 new cases for each death,

TABLE XII

	Cases	Deaths	Ratio
1922	10,519	2,220	4.74
1923	10,105	2,335	4.33
1924	8,634	2,434	3.55
1925	7,709	2,492	3.09
1926	8,504	2,535	3.35
1927	7,798	2,567	3.04
1928	7,085	2,684	2.64

but while the number of reported deaths in Chicago has been rising the number of cases reported has been falling, as revealed in the figures of Table XII.

Part of this enormous drop might be explained by more careful check against counting two or more separate reports for the same person, but certainly no large part. And while the ratio of cases reported per death was falling 45 per cent, the maintenance and salaries budget of the Sanitarium, intrusted with the enforcement of the case-reporting program, was rising 62 per cent. In comparison with Chicago's excellent record in this respect in 1923, it is now below average, for the other cities have generally shown gains in tuberculosis

case-reporting. This is despite the fact that Chicago spends more for anti-tuberculosis work than any other large city.

The two main sources of case reports are the physicians and the dispensaries maintained by the Municipal Tuberculosis Sanitarium. As the nurses operating from these dispensaries are to locate cases and bring them to the attention of the Sanitarium physicians, increased activity on the part of the Sanitarium should be immediately evident in improved reporting of cases. But the cases reported by that organization's dispensaries dropped from 5,747 in 1922 to 3,961 in 1924—a decline of 1,786 cases.

Reports from all other sources stood at 4,772 in 1922 and 4,673 in 1924—a decline of 99 cases. Total reports show a further decline of 1,549 from 1924 to 1928, but figures to show what part of this drop is due to the Sanitarium are not available. In 1922, when reporting by the Sanitarium was at nearly its highest point, the death-rate for Chicago was lower than it has ever been before or since. In 1928, with reporting at its lowest ebb for many years, the death-rate touched a higher point than for any year since 1920. And 95 per cent of the drop from 1922 to 1924 is directly attributable to lessened activity on the part of the dispensaries.

Private physicians constitute the second largest source of case reports. Many of these, however, desiring to save their patients from embarrassment, hesitate to report. In 1928 a drive for improved reporting was made, and a Hearing Board established. In its first two years of operation 1,016 persons were called before it, and in the next two years, 570; but court action was brought against only 14, 6 others being referred to the

state for further action. But this flurry soon subsided. In the fiscal year 1923–24, 110 letters were written admonishing physicians not reporting *open* cases, and only 3 cases, where replies were not received, were referred to the Health Department for legal action.

The Hearing Board has now been abandoned entirely, and the present attitude of the Sanitarium is well set forth in the following statement, explaining the increasing relaxation of enforcement measures:

> Undoubtedly a better measure of co-operation in the reporting of cases was secured (through the hearing boards), at the price perhaps of losing the good will of a considerable section of the profession.
>
> The present Board of Directors hopes to reach the same objective, hopes to receive relative or even better co-operation in the reporting of cases, without having recourse to such drastic procedures. Procedures which are justified or even necessary in the early stages of a health campaign may be dispensed with as soon as the practicing physician shows that he is convinced of the necessity of certain features of health work, as soon as the practicing physician intends, of his own volition, to live up to the laws promoted in the interest of public health.[1]

But the decline of reporting to a new low level for 1928 would indicate that the hopes of the new Board had been unfounded. If any real object is served by following the law on case-reporting, no respectable physician could object to its enforcement.

Tuberculosis is at its worst among the Mexican and negro population of the city, and it is with these groups that a municipal institution like the Sanitarium should do its most effective work. But 78 of the 534 negro deaths from tuberculosis in 1926 were reported by the coroner, and not by a physician at all. Of the remaining

[1] Benjamin Goldberg and Edward P. Troy, "The Dispensary; 'The Field'; Public Health," *Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium*, July–August, 1927, p. 7.

456, 230 were reported by physicians who had been in attendance less than a month. Thus nearly 60 per cent of all negroes who succumbed traversed the entire course of the disease without medical attention from private physicians or from the Sanitarium—living as open sources of infection to all around them.[1] If these figures are attributable to failure of private physicians to report, the Sanitarium might take appropriate action.

Since authorities estimate that there are 9 new cases of tuberculosis developed in a community for each death,[2] there must have been about 24,156 new cases in Chicago in 1928. Actually, there were only 7,085 cases reported, or less than 30 per cent. The chief executive of the Sanitarium argues that there are only 5 actual cases developed for each death, but even if we accept his figures, half of the new cases are escaping notice. The Negro Health Survey report, just cited, points out that the official Chicago figures include many mild, dubious, or wrongly diagnosed cases and that consequently the proper ratio to apply is 9 cases per death. In either case the reporting is far below standard, for each year shows more deaths and fewer case reports.

Outside of Chicago the regional reporting trends are precisely reversed. There was very poor reporting in 1922 and 1923, when the Chicago reporting was good, but in every part of the Region conditions have shown a rapid improvement until the average for the rest of the Region is higher than that for Chicago. This is true although Chicago's anti-tuberculosis expenditures per

[1] H. L. Harris, *The Negro in Chicago* (mimeographed; October 10, 1927), pp. 40–41.

[2] This figure is taken from the reports of the famous study of tuberculosis in Framingham, Mass., by Dr. Armstrong.

capita are far beyond those of surrounding areas. Contrast the trends in Table XIII, showing the ratio of cases reported per death reported from tuberculosis for Chicago as compared with the remainder of regional Illinois.

Statistics show similar trends elsewhere in the Region outside of Chicago. The regional Wisconsin ratio was .22 in 1920 and 2.00 in 1926; the regional Michigan ratio was 1.50 in 1921 and 3.33 in 1926; while the regional Indiana ratio was 1.25 in 1925 (the earliest year for which data was available) and 2.31 in 1926. The sharp Indiana increase is due to the activities of the Lake

TABLE XIII

	Chicago	Regional Illinois
1920–21	4.38	.49
1921–22	4.67	1.24
1922–23	4.46	1.86
1923–24	3.92	1.54
1924–25	3.38	1.77
1925–26	3.23	2.86
1928	2.64	.....

County Sanitarium, recently put into operation. The Lake County ratio jumped from 1.32 in 1925 to 2.61 in 1926, carrying the remainder of regional Indiana (small in comparison) with it. Kenosha county also has a tuberculosis sanitarium, and the 9 nurses employed by Kenosha city do excellent work in obtaining case reports.

In regional Illinois outside of Chicago much of the improvement in reporting is due to the work of the Kane and Will County sanitariums, also recently established. Thus these organizations have brought about sharp improvement while in Chicago case-reporting has fallen to new low levels repeatedly. What active effort may ac-

complish in this respect is shown by the change in the Cook County reporting ratio, credit for which may be shared by the clinics of the Chicago Tuberculosis Institute and the Cook County Health Department.[1] This ratio was .11 in the fiscal year 1921, and rose to 2.98 in 1926—a rate higher than Chicago's in 1928. In Evanston, the only Cook County city where the Health Department is in active co-operation with the Tuberculosis Institute, the ratio of cases reported to deaths was 3.93 in 1925–26, or higher than for any other city in the county.

Another good example of the effects of alert health authorities is Du Page County, where the ratio was 6.59 in the year 1925–26—largely due to activities of the County Health Department. But in general the smaller jurisdictions show poor records. Elgin with 2.10, Berwyn with 1.83, Forest Park with 1.80, and Chicago Heights with 1.25 are examples. River Forest has had only 7 cases reported in twenty-three years, although if the city is average in this respect there are today 180 cases there. The Lake Forest health officer has held his position for over a year, but has "never had a case of tuberculosis reported." Illustrations might be multiplied, but these are typical examples.

Although few of the regional health officers are concerned about it, the "perambulatory" or "migratory" case of tuberculosis embodies a real hazard to the public. The patient who refuses to follow his physician's advice deserves the early death which assuredly awaits him, but unfortunately he does not suffer alone. Members of

[1] The Institute raises most of its funds through sale of Christmas seals, etc., so its activities reflect no credit on public agencies. In 1926 it held 252 chest clinics in Cook County outside Chicago and examined 5,546 persons.

his family or others with whom he associates are almost certain to become infected. These persons in turn suffer impaired efficiency and are additional foci for infection. Failure of authorities to locate every possible case thus causes hundreds of needless deaths.

Our study of case-reporting shows rather definitely that public health activities produce definite results. In every case establishment of a sanitarium district has resulted in greatly increased reporting. From 1915 to 1922 the Chicago Sanitarium seemed to be obtaining excellent results, but since that time reporting has fallen off while the death-rate has risen. This is in sharp contrast with trends in other communicable diseases, under the control of the City Health Department. Before drawing conclusions, however, let us examine other phases of the campaign against tuberculosis.

III. CASES UNDER SUPERVISION

Case reports are valueless unless followed up. Therefore the number of cases actually under supervision is an even better index of activity than case-reporting. The chief executive of the Sanitarium himself declares that "proper and adequate supervision of the open or active case of tuberculosis is the most essential consideration in the control of tuberculosis."[1]

This is thoroughly borne out by Chicago experience. The best authorities estimate that there is 1 quiescent and 1 active case of tuberculosis for each 100 persons, so on July 1, 1927, there should have been 31,500 active and 31,500 quiescent cases in the city.[2] Actually, how-

[1] *Bulletin of the Municipal Tuberculosis Sanitarium*, September October, 1927, p. 31.

[2] This ratio is also taken from Dr. Armstrong's Framingham study. See Boyd, *Preventive Medicine*, p. 80.

ever, there were only 22,311 diagnosed cases under supervision and many of these were not active. The figures show all cases under supervision, including many suspected cases. Note the inverse correlation between death-rates and cases under supervision.[1]

Until 1922, while the number of cases under supervision showed great increases, the death-rate steadily

TABLE XIV

	Cases under Supervision	Death-Rates	Adults under Supervision
1915	9,218	170.6	.....
1916	11,987	148.3	.....
1917	16,626	147.9	.....
1918	24,620	145.9	9,979
1919	30,984	121.3	11,839
1920	31,479	97.2	11,580
1921	33,833	83.5	12,213
1922	35,494	78.3	14,476
1923	34,372	80.9	12,502
1924	30,758	82.8	9,277
1925	.....	83.1	.....
1926	.....	83.2	.....
1927	32,450	82.7	9,975
1928	.....	85.0	.....

declined; but when the number of supervised cases fell off the death-rate immediately rose. The number of adult cases under supervision is the better index of public health activity, and these reached a peak in 1922, since when they have declined to the lowest levels on record.

The highest tuberculosis rates are found among negroes and Mexicans. Although complete statistical data is not

[1] Figures in this table are from reports and publications of the Sanitarium and reports of the City Health Department. The 1927 cases under supervision do not include 3,306 under care of private physicians, but it is thought those for other years do not either. Figures for 1925 and 1926 were refused by the Sanitarium executive.

available concerning these groups, a recent statement by the executive secretary of the Sanitarium attributes 68 of the city's 2,567 tuberculosis deaths in 1927 to the Mexicans, and we have already seen that 534 of the 2,535 deaths in 1926 occurred to negroes. Dr. Godias Drolet, one of the greatest living authorities on tuberculosis, criticizes severely the Sanitarium argument that the 7,798 cases reported in the city in 1927 were all in existence, and points out that illness from tuberculosis among Mexicans is probably four rather than ten times as common as for the remainder of the population.[1] Nevertheless, death-rates of approximately 1,000 and 400 per 100,000 among negroes and Mexicans, respectively, make a rather ghastly comparison with an approximate rate of 60 for the remainder of the population. This is extremely important in view of efforts at control, as case-finding and supervision should be concentrated on these groups. However,

> the districts which often show the greatest number of deaths are precisely the districts which show the smallest number of cases reported. For instance, in one square mile of territory, in the colored district, there were in 1926 almost 200 deaths from tuberculosis and in the same district there were only about fifty open cases under supervision.[2]

According to the most conservative estimates, there are 1,000 active cases of tuberculosis wherever 200 deaths occur annually, and according to many estimates, 2,000. Of course the number of "open cases" is somewhat smaller, but certainly exceeds 400. Two spot

[1] Benjamin Goldberg, "Tuberculosis in Racial Types with Special Reference to Mexicans," and Godias J. Drolet, "Discussion," *American Journal of Public Health*, XIX (March, 1929), 274–86.

[2] *Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium*, July–August, 1927, p. 14.

maps prepared by the Sanitarium itself show the conditions in the negro districts. The first shows location of deaths from tuberculosis in the city, and has large splotches of dots in every negro district. The second shows location of cases under supervision, but there are no heavy splotches of dots in the negro districts here. The Sanitarium has, obviously, located only a small number of the cases which exist among the negro population.

Under such conditions, one would expect the work of the Sanitarium to be redoubled in the negro districts, especially since such huge additional funds have been made available to it. The Sanitarium received eight dispensaries in operation in 1915 from the Chicago Tuberculosis Institute when the Sanitarium took over the functions of the latter, but the Sanitarium has not established one new dispensary or moved one of the old ones. It is true that one substation has been established and another is now contemplated, but the locations are in the Clearing district far to the south, and in the northwest section of the city, respectively, where deaths from tuberculosis are comparatively few.

The effect of this general neglect of the negro population seems to have had disastrous results. In 1915 the tuberculosis death-rate among negroes was 363 per 100,000, while that among whites was 168; in 1920 the negro rate was 320 and that for whites 87.3; and in 1925 the calculated rate for negroes was 418 as compared with 65.4 among the whites.[1] If efforts against tuberculosis were concentrated in these sections, removing these foci of infection, Chicago's record of tuberculosis control might quickly alter.

[1] Grace Lucille Robey, *A Statistical Study of Tuberculosis for the City of Chicago* (Master's thesis, University of Chicago, 1926), p. 16.

Throughout the remainder of the Region case supervision varies. Where public agencies are at work there is a sharp contrast with conditions in Chicago. In Lake County, Indiana, the new Sanitarium in the summer of 1927 had 1,600 cases under supervision as compared with 140 deaths—a record fully as good as that of Chicago although the Lake County Sanitarium has only been in operation a few months. Weekly clinics are held in Gary and Hammond, and monthly clinics in East Chicago and Whiting, in addition to the central clinic at Crown Point, to all of which the Sanitarium nurses bring new cases constantly. Aurora, served by the Kane County Sanitarium, has 348 cases under supervision in contrast with 16 deaths. However, Kenosha, also served by a county sanitarium, has only 52 cases under supervision compared with 15 deaths. Evanston, with an alert Health Department co-operating with private agencies, on July 1, 1927, had 123 cases under supervision, 113 suspect cases, and 491 contacts were listed.

Among the other larger cities the only efforts have been those of private enterprises. Even so, Oak Park had only 52 active and 13 suspected cases under supervision; Cicero had 156 cases under supervision. Were it not for the Chicago Tuberculosis Institute nothing would be done even in these larger suburban centers.

Even private organizations have done little in the smaller suburban municipalities. In Winnetka, one of the better residential suburbs, there were 1 active and 5 arrested cases under supervision; the Wilmette health officer said that they had "only 2 or 3 cases the whole year"; the Forest Park health officer reported "about a dozen cases" under supervision; the Harvey executive said he had no idea how many cases were under super-

vision; and in such Indiana cities as La Porte, Michigan City, and Valparaiso the health departments had no cases under supervision whatever.

The Berwyn Public Health District, with its special tax and full-time staff, maintains better conditions, with 45 cases under supervision as compared with 10 deaths. Maywood has a school nurse paid in part by the village and in part by private organizations, but her work in regard to tuberculosis is incidental only. The Waukegan City Health Department makes no effort to check tuberculosis. In most of the smaller communities nothing is done by any public agency, but no one seems to feel responsible for this work. The charitable organizations do what they can but whatever they do is just that much more than could be expected.

In the tiny villages and townships nothing is done. The school nurses, or county nurses, visit the schools and report children who are underweight, but that is the extent of the work. The Cook County Health Department does maintain a series of health centers throughout that county, but only a small proportion of the population is yet reached by this service. In general the duly constituted public authorities sit idly by and shift responsibility as neatly as they can. The stock statement is that tuberculosis work is done by the County Tuberculosis Association, the Public Health Association, the Health Council, the Chicago Tuberculosis Institute, or some other private agency.

The lack of any unified or responsible tuberculosis control throughout the Region permits the disappearance of thousands of cases each year. Thousands of cases drift out from Chicago into surrounding communities, seeking fresh air and sunlight in less congested

areas. During the two years 1923 and 1924 over 15,000 cases under supervision by Chicago dispensaries "did not return," "were not found," or "left the city."[1] The mobility of population within the metropolitan Region makes it easy for the irresponsible to cross a boundary line. Then a new search for him must be conducted, with the probability that he will infect those about him in the meantime. The need for unified tuberculosis control throughout the Region is apparent.

Conditions of case supervision in Chicago seem to have only one explanation. There has been a sharp decline in the number of adults under supervision; there has been a sharp increase in Municipal Tuberculosis Sanitarium expenditures; there has been a rising death-rate for tuberculosis. This is in contrast with conditions elsewhere in the United States, for Chicago is the only one of the 10 largest cities in the country to show a higher tuberculosis death-rate for 1927 than for 1922. The other 9 showed declines of from 3.4 to 30.8 points as compared with the increase of 4.4 for Chicago; and the 1928 rate for Chicago increased 2.3 points further. The Chicago increase was also in contrast with declines of 15.7 for the remainder of Illinois, 12.5 for Indiana, 9.5 for Wisconsin, and .8 for Michigan.

The results of the scattered charitable enterprises throughout the Region are not wholly satisfactory either. Protection of the public against these sources of infection is clearly a function which should be performed by the public itself, and the funds should come from the public treasury.

Finally, the small units appear wholly inadequate

[1] *Biennial Report of the Municipal Tuberculosis Sanitarium* (1923–24), p. 68.

when faced with a problem of such proportions. Efficient supervision of tuberculosis cases demands centralized responsibility and control in an area as homogeneous as the Region of Chicago. What can the lay health officer of a community of 500 persons do to check the spread of tuberculosis? How could he maintain intelligent supervision of the cases, even if they were reported?

IV. ISOLATION AND TREATMENT

Hospitalization or compulsory isolation are not ideal measures, and are necessary only in advanced or refractory cases. However, these phases of control work are important, and we will compare the various regional areas in this regard.

Since children are especially susceptible to tuberculosis when placed in intimate contact with open cases, Illinois law forbids such cases to occupy the same dwelling with a child under sixteen years. The chief executive of the Chicago Sanitarium states that this provision is rigidly enforced in Chicago, and that

> as soon as it is known that a patient is a positive sputum case, a dispensary nurse calls and informs the family that the open case may not remain in contact with the children, and that some arrangement satisfactory to the Health Department must be made—either the patient or the "contact" child must leave home.
>
> In November, 1926, 2,853 open cases were under supervision in Chicago and of this number only twenty still remained in contact with children, these twenty being in the process of clearance. It will be seen from these figures that the contact with the open case under supervision and the children is effectively broken.[1]

This would all be very well if true, but the facts reveal that enforcement is far from rigid. Of 534 negro deaths

[1] *Bulletin of the City of Chicago Municipal Tuberculosis Sanitarium*, July–August, 1927, p. 10.

from pulmonary tuberculosis in Chicago in 1926, 56 were of children under fourteen. For all classes of population, 378 of the 4,926 tuberculosis deaths for 1924 and 1925 were among children under twelve.[1] The close relation between open cases of pulmonary tuberculosis and deaths among children of these ages is obvious. Either all open cases under supervision are not removed from contact with children or not all cases are under supervision. The Negro Health Survey cited *supra* contains photostatic copies of the death certificates of a negro mother and her two infant children, all of whom died of tuberculosis at the same residence within the month of June, 1926. In the light of these facts, contact between children and open cases cannot be said to be "effectively broken."

Concentration of this condition among the negroes makes failure to check it still less explainable. Tuberculosis death-rates for children under twelve show that the rates for negro children are from ten to twenty-five times as high as those for whites. It would seem that serious application would result in a marked decline in deaths among that population group.

In the matter of hospitalization facilities, Chicago stands somewhat above the outlying districts, if we include all of Cook County. Many of the hospitals which serve Chicago patients almost exclusively are located outside the city limits. The Municipal Tuberculosis Sanitarium maintains 1,104 beds, the Cook County Hospital 338, and the Cook County Tuberculosis Hospital at Oak Forest 630. Other private or federal hospitals maintain 678 beds in the county, all told making 2,750 beds available in the county in comparison with about

[1] *Negro Health Survey*, p. 33; Robey, *op. cit.*, pp. 52–54.

3,000 deaths each year.[1] This condition is quite favorable, with 9 beds for every 10 deaths, although there has been only a slight increase of 41 beds for 1928 over 1923. Elsewhere in the Region there are only 284 beds as compared with 720 deaths in 1926, or 4 beds for every 10 deaths. However, 177 of these 284 beds have been provided since 1923, a much more rapid rate of increase than for Cook County.

In addition to these facilities, Indiana, Wisconsin, and Michigan have provided a total of 1,315 beds, but on the basis of population the regional share of these would be only about 20. La Porte County rents 10 beds in the South Bend Sanitarium. Thus the total available beds for the Region outside Chicago is a little over 300.

Of these sanitariums, 1 is maintained by the federal government, 5 by the states, 7 by counties, 1 by Chicago, and 5 or 6 by private organizations. There are 10 or 15 state statutes permitting local governments to establish such facilities, many of them providing for consolidation of several units together in that sort of enterprise, but most of the statutes have never been utilized. The hospitals are thus poorly distributed. In regional Illinois 5 of the 9 counties have no facilities at all, and must purchase space in outside institutions if they provide any help. Only 3 of the other 7 regional counties possess such facilities. On the other hand, a person ill with tuberculosis in Chicago might be sent to any one of 3 huge public institutions. This is a complicated condition for a district as compact in interests and needs as the Region of Chicago.

[1] The 1923 data used in this discussion of hospital facilities was taken from the 1923 report of the National Tuberculosis Association; the 1928 figures by correspondence with the sanitariums themselves.

The treatment afforded in such institutions is also varied. In the Kane County Sanitarium half of the cases admitted were in the incipient stage, whereas the Will County Sanitarium contained nearly all advanced cases. Thus there was complete difference in attitude; the one trying to cure as many cases as possible, the other seeking to remove the worst foci of infection from the community. The Chicago Municipal Sanitarium conducts considerable research, but not on a scale commensurate with expenditures. Only about half the cities in the Region had open-air classrooms for children suspected of being tuberculous.

The extreme variation in isolation procedures and treatment facilities throughout the Region emphasizes the need for unified direction and control. Hospital facilities should be available to serve the needs of all in the Region, and the facilities should be so co-ordinated that each hospital would take only one general class of patients. With central planning and control a co-ordinated program would be possible, but only so.

V. CONCLUSIONS

One of the most striking phases of the tuberculosis situation is the failure of the regional governments to exercise foresight—to develop and execute a well-planned program based on modern health knowledge. The real initiative in anti-tuberculosis work has come from private organizations. When legislation was enacted or machinery set up the non-public bodies had to provide the motive force.

Second, adoption of the private program by public agencies in each case led to improved case-reporting, better supervision, and increased hospitalization at first.

But results over the last few years have been most disappointing in the case of the only sanitarium district which has been established for any length of time. Control over the Sanitarium staff and the Sanitarium hospital and dispensaries should be vested in the Chicago Health Department; the two organizations should be merged under the sole control of the Chicago health commissioner. Only so may proportion and balance and progress be restored to Chicago's communicable-disease program.

Finally, the need for regional unity of anti-tuberculosis forces is as clear as the need for unity of all health forces in Chicago. In the finding of cases, supervision of cases, and in treatment facilities the value of centralization is apparent. The smaller units have proved themselves wholly helpless, and even cities large enough to afford a comprehensive program seem to lack the leadership necessary for successful action.

Were anti-tuberculosis measures for the entire Region centered in the hands of a regional health department, all parts of the Region would have attention and supervision and access to treatment facilities alike. The tuberculosis division in such a department would be large enough to provide alert leadership and skilled technicians and specialists. Sanitariums, dispensaries, and clinics could be more efficiently and effectively operated if linked together under unified control. The traditional reluctance of the American people to substitute new forms of government for old, however desirable the change appears, stands in the way.

CHAPTER VI

THE VENEREAL DISEASES

Syphilis and gonorrhea are the most widespread and destructive of the venereal diseases. Between them they are said to account for 2 of every 13 deaths in this country, and consequently they are probably the greatest problem confronting the health officer. However, they are frequently not regarded as a public health problem at all, because of their usual mode of transmission and the peculiar public attitude toward them. Although different in many respects they are considered together because measures of control are similar.

Like tuberculosis these diseases take greatest toll from the age group most valuable to the community, peak incidence for females falling at nineteen and for males at twenty-one. Syphilis is a frequent cause of insanity and of mental and physical deficiency in children. It injures general health and decreases earning capacity. Early mortality among its victims is usual, although the true cause of death seldom appears in the death certificate. All deaths from general paresis and locomotor ataxia, and most of those assigned to aortic aneurysm and general debility are due to syphilis. Nearly half of all abortions and miscarriages and over half of all apoplectic strokes in early life are laid at its door, besides a large percentage of premature births, malformations, stillbirths, and deaths from congenital debility. Diseases of the heart, arteries, and kidneys, also epilepsy, encephalitis, meningitis, are often stated as causes

of deaths really due to syphilis. And the social stigma causes misery and suffering, destroys the happiness of millions. Gonorrhea is more prevalent though less destructive, and its social effects are just as serious. It is the chief cause of sterility, is responsible for 10 per cent of all blindness and for from 60 to 75 per cent of operations on the female generative organs.

These diseases are the greatest menace to human life in the Region of Chicago, as elsewhere. In 1926 well over 1,000 regional deaths were directly attributable to them; and if we accept the estimates of the American Social Hygiene Association as a working basis more than 9,000 additional deaths may be traced to them indirectly.[1] In 1927 nearly 30,000 cases were reported in Chicago alone. Unless conditions change abruptly, the Chicago Region during the next generation will lose from 100,000 to 200,000 productive workers by death from these causes.

Nor do the mortality statistics measure the full toll. Added thousands will suffer impaired efficiency, sometimes amounting to total helplessness. Public concern should be aroused over this from a selfish point of view. The venereally diseased make poor soldiers, if they qualify at all; the taxpayer is burdened by increasing thousands of deaf, blind, and insane public charges; and the presence of diseased persons in the community threatens all with whom they come in contact, for thousands who contract these scourges are guilty of no immorality. Simple self-protection demands elimination

[1] This includes 50 per cent of diseases of the heart; 40 per cent of cerebral hemorrhage, softening of the brain, and diseases of the arteries; 20 per cent of chronic nephritis, congenital malformations, and premature births; and 10 per cent of simple cerebrospinal meningitis and epilepsy. In addition, a large percentage of stillbirths must be charged to this account.

of venereal infections from the community if possible. In this respect they are similar to other diseases, and the sanitarian should take vigorous measures to suppress them.

I. CASE REPORTS

As with all other communicable diseases, the health officer must know what cases exist in his community before treatment or isolation requirements can be enforced. But the social stigma attached to these diseases is such that few if any reports are made from many jurisdictions. One Indiana health officer when asked why no venereal disease had been reported from his populous unit for the previous year said somewhat facetiously, "Oh, hell, there isn't any!" Becoming more serious, he added: "I've had three or four cases myself in the past year, but reported none of them. Nobody reports it, but they do try to keep the patients careful."

When the health officer fails to report even his own cases, what may be expected of the profession as a whole? All four regional states require reporting of venereal cases; but enforcement must be by local authorities. The only local agency which actually obtains a large number of reports is the city of Chicago. For the fiscal year of 1925–26 venereal reports for the entire state of Indiana numbered 3,387, or 110.0 per 100,000 population. This compares with 25,424 for Chicago in 1925 and 26,533 in 1926, and a rate of 815.5 per 100,000 for the fiscal year 1925–26. Wisconsin, like Indiana, shows a rate of 111.9 per 100,000 for the year 1925. Chicago's rate thus stands at seven or eight times that of entire states nearby.

As for regional Illinois, the comparison is as shown in Table XV, with the figures representing reports per

100,000 population, and the rural area including cities, towns, and villages under 10,000.

Besides an overwhelming dominance in reporting for both years, Chicago shows a rate of increase over 80 per cent, whereas the rate of increase of other cities and villages was less than 25 per cent, and the rural areas actually showed a decline of more than 10 per cent. Much of Chicago's gain was due to alertness of the Health Department, if indications obtained from figures printed in the *Triennial Report for 1923–1925* and supplemented by information obtained by personal applica-

TABLE XV*

	1921–22	1925–26
Chicago	450.6	815.5
Other cities and villages	124.8	155.7
Rural area	78.8	69.0

* Compiled from the *Eighth Annual Report* and the *Ninth Annual Report* of the Illinois Health Department, pp. 62–66 and 29–31, respectively.

tion are borne out. These showed that cases reported leaped from 18,364 in 1923 to 28,066 in 1927. This gain resulted from an increase of 60 per cent among clinics maintained by the city itself and by private physicians, as well as an increase of 50 per cent for clinics maintained privately and for the clinic of the Cook County Hospital.

One instance of Health Department activity in Chicago is found in compulsory examination of all Morals Court cases in the City Hall Clinic. In 1925 positive tests were made for 1,794 women and 98 men. In these cases treatment may be enforced also, as most of them were actively engaged in prostitution. Many of them were actually isolated. But in most other regional juris-

dictions similar efforts are made only at rare intervals and under unusual circumstances. On the whole, case-reporting in Chicago is good, and has shown a consistent tendency to improve, with the rate for 1927 rising to 904.8, or about eight times the rate for the rest of regional Illinois.

Reporting has been so lax in these outlying districts that the Illinois rules concerning venereal disease permit the physician in cities, towns, and villages of less than 5,000 population to report venereal cases directly to the State Department of Health. These rules further provide for reporting by key number instead of name, whenever the physician will accept responsibility for the patient's abstinence from sexual contacts. Nevertheless, in Berwyn, Blue Island, and Forest Park, with 15,000 to 30,000 inhabitants each, not one case of either syphilis or gonorrhea was reported during the fiscal year 1925–26. Compare with Chicago's rate of 815.5 reports per 100,000 population the following: Chicago Heights, 13.1; Cicero, 11.0; Oak Park, 13.3; and Evanston, 82.6. Many persons come to Chicago from these cities for treatment, but surely local physicians must treat some cases.

In Aurora, Waukegan, and Joliet the rates were higher, being 232.3, 311.7, and 230.5, respectively; and Maywood and Elgin showed rates of 370.6 and 779.4. The first figures are probably higher because of greater distance from Chicago, and the second group because of the location of federal and state hospitals there. Rural Kane County also showed a rate of 601.6, probably due to the hospital factor. The case-reporting rates for the rural areas of the other counties were as follows: Grundy, 0; Will, 3.4; Kendall, 19.8; McHenry, 20.9; Cook, 20.8;

Du Page, 25.2; Kankakee, 37.8; Lake, 66.1. We have already noted the low reporting rates for Indiana and Wisconsin, although Kenosha, with the most alert venereal-disease program of any city in the Region, outside Chicago, had a rate of 229.6 in 1926. That stringent enforcement brings results is shown by Michigan practice, where the rate rose to 609.6 for the state at large for 1925 following enactment of the 1919 reporting law.

Interviews with health officers outside the city simply reinforced the impression conveyed by these figures. Some frankly said that there is "too much red tape and too many books to fill in" for physicians to report, and that when they do report "the doctors lose their business." Health officers of Winnetka, Des Plaines, Batavia, and River Forest declared when interviewed that they had not received a single venereal-disease report during their entire tenures of office. For two years prior to August, 1927, only one case report had been turned in for Harvey, a city of 15,000 persons located in the heart of the Calumet industrial district.

The director of health in Cicero, an industrial city of 60,000 souls, was either less frank than his colleagues or more naïve, for he said, "There are very few, if any, cases in Cicero." The Oak Park Department had "only one call" concerning venereal disease in 1926. In regional Indiana there is even less reporting than in rural Illinois. This situation exists in spite of the fact that Chicago physicians are reporting many thousand cases a year. It seems that the doctors will not report unless obliged to do so, and that the Chicago Health Department is the only regional authority of sufficient persuasive power to obtain results. No respectable physician

should object to reporting if reports are required of all alike, but the larger satellite cities are just beginning to enforce the law, and the rural districts make almost no pretense of enforcement.

II. DIAGNOSTIC AND TREATMENT FACILITIES

Laboratories and clinics are essential elements of any anti-venereal disease program, for early, correct diagnosis and continued treatment are most important. Many infected persons cannot afford private treatment, and since such foci must be removed from the community as soon as possible public equipment is necessary.

Since most private physicians have no adequate laboratory facilities, public laboratories are of great value to them in early detection of cases. There are scores of public laboratories throughout the Region, but only 5 make many tests. During the fiscal year 1926–27 the state laboratories of the 4 regional states made 220,459 venereal-disease tests, or 12.7 for each 1,000 of population. During 1927 the Chicago City laboratories made 89,765 such tests, or 28.9 per 1,000 population—nearly three times the state ratio.[1] No other regional laboratory shows equal volume in proportion to population, and the small city laboratories present a great variety in practice in this field. Perhaps because of superior location, the city laboratory towers above those of the states in the matter of service performed. The advantages of a large over a small laboratory unit will be discussed more fully in a later chapter.

Of the 17 regional clinics co-operating with the Venereal Disease Division of the United States Public Health Service, 12 are located in Chicago and 5 outside,

[1] State figures from the 1927 *Annual Report* of the United States Public Health Service. Chicago data obtained by personal application.

in Evanston, Kenosha, Hammond, Michigan City, and Calumet City. Only in the first 2 do the local health authorities provide sympathetic co-operation. On the whole, the operations of these 5 fall far short of the Chicago clinics, which do 98.9 per cent of all tests, admit 97.3 per cent of all new patients, and administer 95.4 per cent of all treatments recorded for the entire 17.[1]

The Hammond health officer vigorously objected to the paternalism of free treatment, on the ground that "it takes the work out of the hands of private physicians and endangers the public by prolonging the cure." Opposition of the medical profession is said to have blocked establishment of a clinic in Joliet, and appears to be partly responsible for absence of clinics in many other large regional centers. Advocates of the free clinic argue that it takes thousands of non-pay cases off the hands of private physicians, and that anyway the suppression of these diseases is more important than the curtailment of income of physicians.

The Chicago Department of Health seems to be one of the few local authorities able to breast this tide of disapproval. In addition to the City Hall Clinic, mentioned *supra*, 4 other important public clinics are available: House of Correction Clinic, Central Clinic, Cook County Hospital Clinic, and County Jail Clinic. These public clinics provide about half of the case reports. In addition there is the Public Health Institute, a private pay clinic, but not operated for profit, which treats over 1,300 cases per week, and 6 other charitable clinic enterprises which do somewhat less work combined than the Institute.

[1] Basic data from which percentages are derived comes from the same 1927 *Report*.

Since Chicago's facilities are superior to those outside, all other jurisdictions except Kenosha and Evanston refuse to accept responsibility, and the burden for this work throughout the Region is placed mainly upon Chicago. Small cities "sponge" upon their mighty neighbor. The following comments of health officers express this suburban point of view:

> We are making no effort to establish clinics because the Chicago clinics are available. It would be a waste of money.—Berwyn.
>
> We don't know whether they use Chicago clinics or not, but we assume they do.—Oak Park.
>
> Most cases go to Chicago for treatment. They try to get away from the doctors here at once.—Wilmette.
>
> So far as I know these patients go to the city. Brookfield makes no provision for them because the County does. We are in Cook County and entitled to County service. We try in all the work not to duplicate.—Brookfield.

The effect of Chicago's proximity upon local venereal-disease programs is illustrated by the results of the 1925 *Health Survey of 15 Illinois Cities*, which showed that the 5 cities in regional Illinois made a combined score of 0 on this item, as compared with a combined score of 229 of a possible 380 for the 10 other Illinois cities. The whole area about the city uses the clinical service which Chicago's generosity provides, though most of the satellite (or parasite) municipalities would oppose annexation through fear of higher taxes. It is not surprising that Chicago's case rates are swollen while the suburban areas appear spotless by contrast.

In this discussion of laboratory and clinic facilities, in addition to the tendency of smaller jurisdictions to lean upon Chicago, it again appears that the larger units of government are the only ones which have attacked this problem. The federal government first provided effec-

tive stimulation through the Chamberlain-Kahn subsidy to the states, but apart from it only the states and Chicago, and more recently two or the larger and more alert suburban cities, have done anything in this field.

III. ISOLATION

Were not prostitution the primary source of infection, isolation of the venereally diseased would be superfluous. Lacking assurance that the patient will refrain from sexual contacts, isolation is the only effective means of preventing further spread. Although the Illinois rules for the control of venereal diseases provide for quarantine, isolation, and placarding of venereal-disease cases, these requirements may be waived as long as the patient follows instructions. Indiana officials quarantine only when this seems to be "necessary," and as most cases never come to their official attention the law is almost a dead letter. Michigan rules and Wisconsin law also provide for quarantine and commitment, respectively.

Despite this legal background, however, Chicago is the only local government in the Region which enforces routine isolation in any class of cases. It maintains the Lawndale Hospital for the sole purpose of isolating and treating prostitutes with infectious venereal diseases. Here again, however, Chicago's initiative is checked by the provisions of the rules of the Illinois Department of Public Health on the subject, which permit isolation of cases infectious only at the moment of examination, with the result that hundreds with positive laboratory tests escape detention although they may become infectious at any moment. Nevertheless 608 of the 3,753 women arrested for prostitution in 1925 were sent to the Lawndale Hospital, and the Department has even undertaken

placarding of houses of prostitution in some cases. The most recent departmental report states that

> every prostitute who falls into the hands of the police is brought to the Health Department and a serious effort is made to convince her of the dangers of venereal disease. The prostitute and her male associate have learned that an arrest is not a trivial thing. If she is found to be infected with a venereal disease, it not only means isolation for the prostitute and a cutting off of the income of the pimp, but it means placarding of the house.[1]

Although there is no other local authority which maintains a sustained attempt at isolation, state authorities are more active in this regard in Indiana, Wisconsin, and Michigan than in Illinois. However, the states maintain no special hospitals and the effectiveness of their isolation programs suffer as a consequence.

Naturally, the smaller regional units do not have hospitals devoted to this purpose, for the expense would be prohibitive. About all they attempt in the way of isolation comes as an aftermath to an occasional abortive clean-up campaign. For example, in a recent series of raids in Aurora thirty-five prostitutes (all diseased) were arrested and quarantined for five months at county expense. This procedure is rare, however, for the usual extent of activity is incarceration of a case or two each year for a few weeks in the county jail, after which release is granted upon promise of "good behavior."

In isolation procedure the outstanding fact is that Chicago—blamed by surrounding municipalities for all their venereal disease—is the only jurisdiction in the Region with effective quarantine methods. Chicago may stop short of perfection but its score certainly stands well above zero, which represents the sum total of effort in this direction by most of the other 330 local authorities.

[1] Chicago Health Department, *Triennial Report* (1923–25), p. 179.

IV. THE PROBLEM OF PROSTITUTION

The social problem of prostitution is so closely related to the public health problem of venereal disease that it cannot here be ignored. Moreover, prostitution is a regional problem because the very number of local governments makes unco-ordinated attempts at suppression futile. A prostitute ejected from one jurisdiction finds 330 possible havens of refuge within a radius of fifty miles, within the same economic and social urban center.

Some of the health officers interviewed insisted that there was little or no prostitution within their jurisdictions (as in Cicero, Forest Park, and Whiting). Discussion of the situation with others, however, revealed two attitudes expressed repeatedly. The following statements are indicative:

> Most of our venereal disease comes from Chicago. The young bloods become infected there.
>
> The prostitutes who operate locally are a Chicago product. They just come out here for payday.
>
> We have no prostitutes in our community who are venereally diseased. We kick 'em out. . . . . We insist upon the examination of prostitutes. If they are examined and found diseased, back they go to Chicago.
>
> Sometimes people hunted down for treatment leave. Where they go is none of my business.

Thus many health officers of suburban centers blame Chicago for all their woes in this connection, and many others feel no concern for the effects of their acts upon neighboring populations. Even if ejected from 90 per cent of all cities, towns, and villages, there would still be twenty places where molestation would not be attempted. Such a procedure may result in a high degree of mobility among the prostitutes, but hardly in any diminution of numbers or activity.

In a metropolitan area of this sort one or two vice-ridden municipalities could neutralize any concerted effort by the remainder. As a matter of fact, some of the most troublesome vice centers of the Region are located outside all municipalities—along the country highways. There are scores of roadhouses along the Indiana Dunes Highway and the traffic arteries north and west of the city proper, and according to many different sources of information open prostitution flourishes among them. They are outside city or village jurisdiction in most cases, and are said to operate practically without police interference. Under modern transportation conditions, these locations are well within the limits of the metropolitan community.

Obviously, the only solution of this problem lies in unified control throughout the entire Region. It is humanly impossible to secure voluntary unanimity of action among 328 local governments involved. Therefore, consolidation of jurisdiction in this regard under some superior central authority is required before effective progress can be made, or even before any constructive program can be adopted.

V. SUMMARY

In view of the conflicts between jurisdictions, and between officials within the same jurisdiction, the inability of the municipalities to control surrounding areas, and the inertia of the average minor health department, it would be surprising if any progress whatever had been made toward prevention of venereal disease in the Region of Chicago. It is entirely probable that much of the value derived from the Chicago program is dissipated by the laxity of measures in surrounding areas.

As for the venereal-disease programs of the various authorities, results of the various types of comparison adopted in this study have been strikingly uniform. Nevertheless, for the purpose of clarity the main conclusions are summarized as follows:

First of all, Chicago and one or two of the larger cities are the only local authorities pressing for more complete reporting of cases; Chicago maintains by far the best laboratory in the Region for diagnosis of venereal disease because it is largest and can consequently reduce unit costs to a point unheard of in the smaller laboratories; Chicago's clinic facilities provide from 95 to 99 per cent of such services rendered in the Region; Chicago maintains the only public hospital in the Region assigned exclusively to the care of such cases; Chicago is the only local government which enforces isolation of prostitutes as a matter of routine under any conditions. Outside of Kenosha and Evanston most local health authorities are more anxious to avoid mention of these scourges than to discuss possible means of prevention and control.

Second, state authorities are too far removed from the local situation to do effective work. This is true in the matter of the state's enforcement of case-reporting laws, although the stringent statute enacted by Michigan seems to have aided in raising reporting standards there. It is true in the matter of diagnostic facilities, although the value of the large unit is revealed by the fact that next to Chicago the states were the most active forces within the Region. It is shown in the case of clinics, for those which were first established by the states under the inspiration of the federal government have languished except in those cities where active co-

operation has been given by the health departments. It is shown in isolation, quarantine, and hospitalization measures, where the only effective activities in the Region have been those of Chicago.

Finally, the regional nature of this problem is apparent on every hand. Case-reporting is of little value unless the officials at the place of residence are informed in each case. Measures looking toward suppression or restriction of prostitution are futile unless applied throughout the Region as a whole. Suburban authorities complain of the evil influence of Chicago, apparently without realization that absence of any activity among them makes the Chicago problem much more difficult. It is much easier to adopt a "holier than thou" attitude, to condemn Chicago as a den of iniquity, and to extol the virtues of the suburbs than it is to expend the effort required in executing a real preventive or control campaign. As a matter of fact, sanitarians realize that venereal disease is present in every community of any size in the United States, and for the health officer of any community of 10,000 souls to deny its existence indicates either the absence of knowledge or the presence of hypocrisy.

Already these communities lean heavily upon Chicago's laboratory, clinic, and hospital facilities without contributing anything to the cost. These facilities might be extended to provide more fully for the needs of the surrounding areas were it not for our antiquated system of governments. Any adequate solution will entail a consolidation of these governments, which were fashioned to meet the needs of a rural environment, into some form consistent with our modern urban community.

CHAPTER VII

INFANT, MATERNITY, AND PRESCHOOL HYGIENE

This phase of public health work is comparatively recent in its development, but is second only to control of contagion in popular interest. Aside from its justification in economic returns to the community, the saving of infant lives has an enormous sentimental value. The exploitation of infant welfare work, accompanied by sharp declines in infant mortality, was so successful in the eyes of the public that maternity and preschool hygiene programs have been adopted by alert health departments. These three phases of child hygiene will be dealt with separately.

I. INFANT HYGIENE

Aside from prenatal care, the main requirements for preservation of infant health are (1) proper food and clothing, (2) sunshine and fresh air, (3) protection against infectious diseases, and (4) supervision by qualified persons. In the modern metropolis only the powerful hand of "the government" can give the baby these things; pure food, wholesome milk, even sunshine, are the gifts of government and not of God.

During the last quarter-century the death-rate for infants under one year has been cut in half, and sanitarians now put forward the possibility of halving even the present rate. Although progress is not due wholly to public health activities, their influence has been very

important. McCombs declares that nowhere in the field of municipal health work can money be spent so productively as in the promotion of child health; and Woodbury states that the two best methods to be used in checking infant mortality are provision of infant clinics and dissemination of information.[1] The importance of public activity is emphasized by the fact that the mortality-rate for infants over one month is ten times as high among the lowest-income group as among the highest.[2] In the Chicago Region appropriate instruction for mothers and careful supervision for babies, in tens of thousands of cases each year, will be obtained in a public clinic, if at all.

The work of the federal government has had two phases. The Children's Bureau of the Department of Labor has gathered much data concerning infant care, and its publications have been widely distributed and copied.[3] But since the adoption of the Sheppard-Towner Act in 1922 the federal government has become directive as well as instructive in this work. The Children's Bureau must approve a state's child-hygiene program before the federal grant-in-aid is forthcoming. To this end Bureau representatives visit co-operating states to discuss activities, check accounts, and, when requested, to collaborate in nurses' institutes on maternity and infant care.[4]

[1] In *City Health Administration* and *Infant Mortality and Its Causes*, respectively.

[2] "Economic Status and Health," *U.S. Public Health Bull. 165* (1927), p. 65.

[3] Prior to 1926 the Children's Bureau had distributed 3,000,000 copies of child-care pamphlets (Tobey, *National Government and Public Health*, p. 240). The United States Public Health Service makes similar studies at times.

[4] Tobey, *op. cit.*, p. 243; Leigh, *Federal Health Administration*, pp. 418–19.

All of the regional states except Illinois have accepted the provisions of the Act and, in addition to the funds received from the federal treasury, have increased their own allotments for the work. Despite the refusal to accept federal aid, said to be due to opposition of the State Medical Association, the Illinois legislature has permitted the state department to improve its work in this field, and this improvement is doubtless due in part to the stimulation of the federal example.[1] Incidentally, opposition of the State Medical Association in Illinois to the "pauperization" supposed to result from infant clinics extends to the Chicago Medical Association and some county medical associations—an opposition not shared by the medical associations of other states.

The Division of Child Hygiene and Public Health Nursing of the Illinois Department of Public Health confines its activities in the main to collecting statistical information and checking up local agencies, although it does distribute some literature and conduct a few baby clinics with the small amount of funds available.[2] While over half the state's population is within the Region, the 1926 department report states that only 11 of the 62 state baby conferences of that year were held in the Region, and only 11 per cent of the 6,893 babies examined lived there.

The Indiana Division of Infant and Child Hygiene has made some valuable infancy and maternity studies; from 1919 to 1926 it distributed 787,136 pamphlets and reached 468,903 persons with health talks; from 1923 to

[1] Leigh, *op. cit.*, p. 243; and Rawlings, *Rise and Fall of Disease in Illinois*, p. 200.

[2] Indiana, Wisconsin, and Michigan had about six times as much to spend per capita (*Financial Statistics of States* [1926]).

1927 it examined well over 30,000 children; and from 1919 to 1926 it enrolled 36,775 women in mothers' classes for instruction in prenatal and infant care.[1] But while regional Indiana contains from 10 to 12 per cent of the state's population, whenever figures are available it is found that the proportion of attention devoted to the Region by the state is less than that. This is true although the industrial populations of northwestern Indiana are in dire need of just this sort of assistance.

The work of the Michigan Bureau of Child Hygiene and Public Health Nursing and of the Wisconsin Bureau of Child Welfare includes maintenance of baby health centers, and of traveling clinics. One feature of the Michigan program is classes for girls and mothers, and for midwives; and Wisconsin high schools have established courses in infant hygiene almost universally.

In 14 of the counties a baby clinic conducted by the county is not a routine procedure because the county nurses concentrate their attention upon the school children. But in Du Page County the health director has co-operated with the local authorities, and has arranged several clinics in the various cities and villages during recent summers. The Cook County Department of Health is the only county organization which maintains permanent clinics however. It has 18 stations throughout the county, outside Chicago, in which 288 "conferences" were held during the last reported year, with 2,045 babies in attendance. A powerful private agency, the Chicago Tuberculosis Institute, has also invaded this field in Cook County outside Chicago, and in 1927 held 468 clinics with a total attendance of 10,636. At

[1] See *Indiana Yearbook* (1926), pp. 624 ff. More recent figures appearing here are by courtesy of the Division of Infant and Child Hygiene.

last report it was maintaining 16 stations, with 17 sessions per week.

But by far the most important infant welfare program in the Region is that of Chicago. Something like 8,000 infant clinics are held each year, with the number increasing steadily. The City Health Department maintained 25 stations in 1925, and the Infant Welfare Society, a private organization, maintained 26, with from 3 to 5 clinics held in each weekly. The number of babies registered rose from 23,493 in 1923 to 33,606 in 1925, and the total attendance from 119,775 to 182,638.[1] This increasing activity was attended by a marked decline in the infant mortality rate, from 87.3 deaths per 1,000 livebirths in 1923 to 74.8 in 1925; and this decline has continued in 1926 and 1927.

That this improved program has been a vital factor in reducing infant mortality cannot be doubted when we compare death-rates among registered babies with those in the city at large. Thus, in 1923 only 8.8 deaths were reported per 1,000 registered babies, whereas for the city at large deaths among infants under one year were 87.3 per 1,000, and among infants from one to two years, 19.3. In 1925 the death-rate of 6.9 among registered babies compared with rates for 74.8 and 15.7 among babies under one and from one to two, respectively. Since babies over two years are not accepted at the clinic, it is obvious that one of two things must be true: either only the healthier babies are brought to the clinic, or the clinic saves hundreds of infant lives each year.

[1] Chicago Health Department, *Triennial Report* (1923–25), p. 229. Rates in the next paragraph for infants from one to two years of age were computed by dividing the number of births reported for the previous year less the deaths under one year by the number of deaths within the age group, and multiplying the quotient by 1,000.

The effects of this expanded program are again brought out in a comparison of Chicago with the other 15 largest cities of the United States. While Chicago's infant mortality rate ranked her thirteenth among these cities in 1923, the improvement made by 1927 gave her a ranking of sixth. The decline of 24.5 points in the infant mortality rate from the 87.3 of 1923 to the 62.8 of 1927 was exceeded only by 2 cities, neither of which had reached a level as low as that of Chicago in 1927.[1]

Similarly, the speed with which Chicago is reducing its infant mortality rate ranks that city high above the smaller regional centers. An analysis of rates among the 15 largest of these reveals Chicago's decline of 20.5 points from 1923 to 1926 was equal to only 2 of the 15, whereas 4 actually showed increased rates. The average decline among the 15 was 9.1 points as compared with Chicago's 20.5. And in 1926 only 3 of the 15 showed a lower rate than Chicago; and of these (Oak Park, Evanston, and Aurora), 2 have very notable hospital facilities which probably give them an abnormal birth-rate and a consequently low infant mortality rate, and all 3 have fairly active infant welfare programs either under public or private auspices.

In the same way, a comparison of Chicago with the rural portions of the 16 regional counties reveals both the pre-eminence of Chicago and the value of an infant welfare program. Figures for 1923 and 1926 showed a decline of 20.5 for Chicago, as compared with a decline

[1] For base data from which the rates cited in this and the next two paragraphs were computed see *Birth, Still-Birth and Infant Mortality Statistics of the U.S.* (1923, 1924, and 1925), where available. For 1926 figures, except for the rural area, see American Child Health Association, *Statistical Report of Infant Mortality for 1926 in 675 Cities* (June, 1927); and for 1927 see the *Weekly Reports* of the U.S. Public Health Service.

of only 2.0 for the 16 counties combined. Seven counties showed increases, and only 1 showed a greater decline than that of Chicago. Of the 16 counties, 9 have higher infant mortality rates than Chicago, despite the heavy handicap placed upon the great city, with its slums and negro population. Note in Table XVI that the order of Chicago, "other cities" and "rural areas," for 1926 is the exact opposite of what it was in 1923.

Perhaps an explanation of the situation here revealed may be found in part in the fact that Chicago's system of follow-up is not general throughout the Region. The parents of each child whose birth is reported in Chicago

TABLE XVI

	1923	1926	Decline
Chicago.....	87.3	66.8	20.5
Other cities.....	82.4	73.3	9.1
Rural areas.....	77.9	75.9	2.0

receive monthly bulletins from the Health Department outlining the most approved methods of infant care. Moreover, public health nurses call upon each home where a birth is reported to check upon surroundings and give advice where needed. Only one or two other jurisdictions in the Region offer any comparable service.

Outside of Chicago, in only 4 regional cities are the health departments actively concerned in maintenance of infant clinics. Kenosha has welfare stations in four school buildings, with an attendance of 1,678 of 1926; and Evanston held 252 conferences in 1927, with 6,820 infants in attendance—a record better than Chicago's, relative to population; while Hammond and East Chicago supply nurses who attend clinics provided by pri-

vate agencies. Other cities, like Cicero, Oak Park, and Berwyn, also employ nurses who aid in the infant work of other organizations. Cities like Joliet, Aurora, Elgin, and Waukegan rely upon private or largely private organizations to provide clinics.

In many regional cities there seems to be no attempt to prevent infant mortality by either follow-up, literature, or clinic. The disorganized conditions prevailing in Gary are set forth in Miss Hughes's study, "Infant Mortality in Gary," published as *Children's Bureau Publication 112*. Where private organizations are at work, health officers frequently show either passive or active hostility to their programs. One, asked if a clinic existed in his city, replied: "I guess there is one. I see about a dozen baby buggies over there across the street once in a while."

Another argued that the infant welfare stations should be "in every doctor's office"; a third charged that women who wear silk stockings (*ergo*, women who could afford to pay a private physician) take their babies to the clinic, and also that the public health nurses go into homes and prescribe; a fourth said that the local clinic could not keep a regular physician because of the fear that competing physicians would charge them with trying to steal their clientèle; and a fifth expressed himself as follows: "The clinic is petering out now. It doesn't accomplish anything anyway. The nurse just favors her special friends among the doctors and helps their patients."

This attitude on the part of private physicians seems to be quite general throughout the Region. Four of the five men cited represent cities of more than 10,000 inhabitants. In one of the larger suburbs two young pedi-

atricians were threatened with expulsion from the county medical association because of their connection with the baby clinic. A formal hearing was held to consider the charges against them, consisting in the main of the argument that women who could afford to pay a private physician brought their children to the clinic for weighing and advice. They were not expelled, and at the meeting a local public health nurse appeared and countercharged that one of the complaining physicians had given a mother a formula for baby-feeding which included a large proportion of a brand of condensed milk—the point being that the babies were getting better care from the young specialists than they would from many general practitioners.

It is true that these clinics probably deprive physicians of some private practice, since few mothers go to a physician with a child until it becomes ill, and a clinic which keeps a baby well might plausibly be said to injure the practice of the private physician. On the other hand, clinics build up private practice, for they direct attention to the importance and need of medical care for children and so increase the demand for doctors. At any rate, physicians outside the larger cities and outside Cook and Du Page counties need fear no loss of practice on this score. Cities like Zion, Batavia, River Forest, Lake Forest, St. Charles, La Porte, and Valparaiso have not the vestige of a clinic. Crown Point reports one held there "a few years back."

II. MATERNITY HYGIENE

About half the deaths of children under one year occur in the first month of life, owing to causes which have their inception during the prenatal period. The great re-

cent interest in infant welfare has thus naturally turned attention to maternity hygiene as a means of preserving infant lives. Although there is as yet little standardization of program, there are four recognized lines of attack: (1) education and medical supervision of expectant mothers; (2) raising standards of prenatal care among physicians; (3) regulation and supervision of midwives; and (4) provision of facilities for the care of every pregnant woman.

In educational endeavor the federal government stands pre-eminent; its bulletin on prenatal care has had enormous circulation and has been widely copied for local publication. The Michigan State Department mailed out 27,000 letters during one recent year, and the Wisconsin Department 5,350 in two years. Illinois mails a series of prenatal letters "to prospective mothers who desire them"; and reference has already been made to the mothers' classes in Indiana and elsewhere.[1] However, the number of these state and federal pamphlets and letters reaching the Chicago Region and, indeed, effective educational work in general, depends primarily upon the agency closest to the population—the local health department. The Chicago Health Department sends booklets to all expectant mothers on its mailing list, but the list is incomplete. Other regional local health departments do not perform even this service.

Instruction of physicians in prenatal care must be mentioned with bated breath. Do some physicians fail to observe the most approved and up-to-date methods? Perish the thought! Though the other three states make no effort in this direction, Michigan recently sent out a

[1] See Tobey, *op. cit.*, and the reports of the various state health departments cited *supra*.

bulletin on *Standards of Prenatal Care* to each of 4,750 physicians in the state. No evidence of any such activity among local health authorities of the Region was found. Moreover, recent sensational newspaper disclosures and murder trials in Chicago indicate plenty of room for improvement in the supervision of maternity hospitals. Even so, the Chicago Department exercises more careful supervision than most local authorities, making annual or semiannual inspections. Wisconsin practice showed that the average small health department failed to enforce the law in this regard, and made provision for state enforcement.[1]

Regulation and supervision of midwives is a problem declining in importance, although even in 1926, 8,355 babies were born in Chicago without a physician in attendance. Only a few years ago over half of Chicago births were attended by midwives, but this proportion had decreased to 23.3 per cent in 1922 and 13.9 per cent in 1926. In parts of regional Indiana the percentage is much higher. Thus in East Chicago 633 of the 1,064 births reported in 1926, or 59.5 per cent, were attended by midwives; and midwive deliveries in Gary, East Chicago, Hammond, Michigan City, and Whiting exceed those of the entire remainder of the state of Indiana, including Indianapolis, Fort Wayne, South Bend, and other large cities. In Kenosha 35 per cent of all 1926 births were attended by midwives, and in Zion, Illinois (home of an isolated religious sect), nearly all were so attended.

What was more alarming was that most health officers would not even attempt to make an accurate estimate

[1] Figures given in these paragraphs are from State Health Department and Chicago Health Department reports, or were obtained by the courtesy of the various Health Department officials.

of the percentage of births so attended in their jurisdictions—indicating a general absence of local supervision over activities of midwives. Informed health workers say that abolition of the midwife is impossible, and urge establishment of minimum standards to which she must conform; but Michigan seems to be the only state which issues basic instructions to them, and provides for inspection of their homes and general appearance. The remaining three regional states seem oblivious to conditions prevalent in the crowded metropolitan area. In Chicago 52.6 per cent of all reported deliveries were hospitalized, 55.1 per cent in 1926, 59.2 per cent in 1927, and 62.8 in 1928; but elsewhere health officers were almost universally ignorant of the proportion and could supply only the vaguest estimates.

The fourth item of the maternity hygiene or program is provision of clinical or other facilities for care. The importance of this aside from saving of infant lives is evidenced by the fact that the Metropolitan Life Insurance Company pays the Joliet Public Health Council for each prenatal nursing visit to policyholders. Although the American Child Health Association estimates that 15 per cent of expectant mothers need clinical supervision and instruction, only about 3 per cent obtain such, in the Chicago Region. The 10 Infant Welfare Society clinics in Chicago are most active, with 4,024 attendance and 6,553 nurses' visits in 1926.[1] The Chicago Health Department also maintains 6 such clinics, besides the 26 hospital clinics available. The only other city health department in the Region maintaining such a clinic is that of Evanston, which aided 163 expectant mothers in 1926.

[1] Infant Welfare Society of Chicago, *Sixteenth Annual Report* (1926), p. 6.

Gary, Cicero, Elgin, Waukegan, Wilmette, Crystal Lake, St. Charles, North Chicago, Forest Park, Lake Forest, Crown Point, La Porte, Des Plaines, River Forest, Batavia, and Zion report no supervision available free of charge. Berwyn, Joliet, and Aurora provide supervision "as requested," and Whiting, Winnetka, and Lockport have nurses who give instruction and advice "as requested," and similar conditions exist in East Chicago and Hammond; but cases rarely come to light unless special effort is made to find them. Lacking the existence of regular clinics or some survey method such as that which enabled the Cook County Health

TABLE XVII

	1923	1926	Decline	Increase
Chicago	44.3	37.3	7.0	
Other cities	34.4	35.9		1.5
Rural areas	28.2	32.3		4.1

Department to locate 40 cases needing supervision, few persons are served. Of course, infant clinics are always centers of dissemination of literature and information concerning prenatal care, but only incidentally.

The results of the increasing activity of the Chicago Health Department and the Infant Welfare Society in Chicago are evidenced in the trends indicated by Table XVII. The figures cited are the number of stillbirths per 1,000 livebirths in the jurisdictions and for the years indicated. Since the stillbirth rate is said to be an excellent index of prenatal care, the decline of 7.0 points for Chicago while the other rates rose 1.5 and 4.1 points, respectively, seems important.[1]

[1] United States Bureau of the Census, *Birth, Still-Birth, and Infant Mortality Statistics* (1923, 1924, 1925).

III. PRESCHOOL HYGIENE

The care of the "runabout child," aged two to six years, has until recently received scant attention from sanitarians, although some very effective work might be done by way of vaccination against smallpox, immunization against diphtheria, and medical inspection to alleviate correctable handicaps before school work begins. Vaccination and immunization work were discussed in the chapter on "Contagion," but it might not be amiss to note here that Chicago had immunized 44,000 preschool children against diphtheria in 1927. Most local authorities had attempted nothing with this age group.

As for clinics, three state departments do limited work—Indiana examining 2,702 preschool children and Michigan 1,940 during the last year reported, and Wisconsin examining 5,918 such in the last two-year period. The Illinois State Department has confined its efforts to stimulation of local authorities to adopt the "summer round-up" plan. In 1925 the 10 clinics of the Chicago Health Department and the 17 of the Infant Welfare Society for this age group together had enrolled 3,348 children. The Evanston City Health Department also has a preschool clinic, with two weekly sessions, but elsewhere public authorities do nothing. While Evanston made a perfect score in this work in the 1925 *Survey of 15 Illinois Cities*, the other 4 regional cities received only from 26 to 29 per cent of a perfect score, and most of the points they did get were due to the activities of private organizations. The scores of Oak Park and Cicero were materially aided by the work of the Chicago Tuberculosis Institute which held 90 preschool clinics in 1927, with a total attendance of 751 children.

IV. SUMMARY

By way of summary of this entire chapter, it might be well to cite here the 1925 expenditures of the cities of the Region for 30,000 population or over, for the conservation of child life, other than medical aid for school children, as given in *Financial Statistics of the Cities, 1925* (see Table XVIII). Gary's continued neglect of this phase of public health work is in the face of recommendations made by the representative of the Children's Bureau of the United States Department of

TABLE XVIII

	Total	Per Capita (Cents)
Evanston	$ 8,721	19.7
East Chicago	2,951	6.5
Chicago	110,780	3.74
Hammond	623	1.4
Gary	85	.1
Aurora	.....	.....
Elgin	.....	.....
Oak Park	.....	.....
Cicero	.....	.....
Kenosha	.....	.....
Joliet	.....	.....

Labor after careful and complete investigation in 1922, published in *Children's Bureau Publication 112.*

One fact brought out in this chapter is that the state departments are giving most of their attention to non-regional areas. The states tax the Region to maintain an infant welfare program in agricultural districts. Even the money granted by the federal government in aid of the states, and raised principally in the cities of the country, is diverted by the state authorities to feed a rural health program. The federal program has resulted in much good, but the states are artificial intermediaries

between regional Chicago and the United States government. Even the research activities of the state departments relate mainly to rural problems and are of little value to the urban areas.

In the field of infant hygiene the work of the Chicago Health Department stands out, although the Evanston and Kenosha departments are isolated cases where other local authorities are active. The sharp decline in the infant mortality-rate in Chicago is in contrast with a much slower rate of decline elsewhere in the Region. Although the Chicago program in maternity hygiene is still rudimentary, it is gaining ground and achieving results as demonstrated by a drop of 7.5 points in the stillbirth rate while the remainder of the Region as a whole showed an increase of .3 point. Evanston has the only other regional local health department active in this field. Similarly, in preschool hygiene, Chicago and Evanston are about the only local authorities which have a program of any sort. In fact, most of the 330 minor health departments are completely without interest in any phase of child welfare work.

CHAPTER VIII

HEALTH OF THE SCHOOL CHILD

Equality of opportunity is a tenet of American faith; and this, being interpreted, has been taken to mean equality of educational opportunity. This relates to public health in that a child is not at his best mentally if physically handicapped. Educators insist that children learn more readily if they are in excellent health. It follows, therefore, that if the community owes each child opportunity for a free education, it also owes him opportunity to be healthy free of charge.

I. SCHOOL SANITATION

School health work divides naturally into three phases: sanitation; personal hygiene; and, most important of all, thorough medical examination. Sanitation includes provision of proper light, heat, and toilet facilities. As there are 986 separate school districts in the Region, it is difficult to assure maintenance of minimum standards. Some districts maintain no school; many support one-room schools; others provide one or more buildings of varying sizes. Chicago constitutes a single district, with several hundred buildings housing 550,000 children; but several Illinois cities are divided into two or more districts, and frequently urban districts are not coterminous with city or village lines. The system is something apart from other governmental units.

All four regional states have statutes covering school sanitation, but enforcement methods vary. In Indiana

state officers are to inspect schools; but for the last reported year the Division of School Hygiene examined only 92 of the 5,385 buildings, and of the 24 declared unsanitary not one was located in the Chicago Region.[1] In Illinois and Michigan the county superintendents of schools are expected to perform inspection service, and in Wisconsin responsibility is placed on the local health officer. However, facts concerning their activities are not available, and casual observation would indicate that inspection standards depend upon local conditions and local initiative. Federal influence in this field has been excellent, numerous publications of value resulting from activities of agencies which are, however, scattered among at least three separate departments.[2]

II. PERSONAL HYGIENE

Four things might be considered under this head: health instruction, physical training, playground management, and school feeding. The first two phases are especially important, and activity here will undoubtedly be felt in the future community health; but the sources from which information concerning them may be gleaned are so different from those which supplied most of the material for other portions of this study that no more than a very casual survey was attempted. Money spent in this connection would undoubtedly be productive, but the whole subject is somewhat specialized in nature and might better be studied apart.[3]

None the less, some facts are worth noting in this study. One is the activity of certain federal agencies in

[1] *Indiana Yearbook* (1926), pp. 664, 726.

[2] Tobey, *The National Government and Public Health*, pp. 360-61.

[3] A study of education in the Region of Chicago is now being conducted by Mrs. Portia Pearson Parratt.

development of courses in hygiene suitable for school use—an activity for which the average local school unit lacks funds.[1] Another is that while the state superintendent of public instruction, with or without collaboration of the State Health Department, is expected to outline an approved course of study, no effort is made to distinguish between urban and rural health conditions or between urban and rural teaching facilities. Finally, the widest variation exists among even the larger cities of the Region in the matter of health instruction. In the 1925 *Illinois Health Appraisal of 15 Cities* the 5 regional cities made scores in health education and recreation varying from 39 in the case of Joliet to 10 for Cicero. If this variation exists within the same state and among cities of nearly the same size, the possible variations between Chicago and the numerous one-room school districts of the Region are enormous. And as for physical training, playground management, and school feeding, such matters are left entirely up to the individual school system.

III. PHYSICAL EXAMINATION AND SUPERVISION

The physical examination, properly conducted, is one of the most effective methods of health education. It may be made the occasion for advice with an immediate and direct application, and it may lead to discovery and removal of remediable defects. It is the school health activity most stressed in the Region, and is more closely related to the general public health program than the others.

Federal work in this phase is again confined to research activity by each of three separate agencies. The

[1] Tobey, *op. cit.*, pp. 278, 361.

resultant publications are valuable as guides for local authorities in the development of school health programs.

Among the state agencies, the Illinois Division of Child Hygiene and Public Health Nursing has devoted most attention to this phase of child welfare. Not receiving federal aid, and consequently not having its expenditures directed by the federal Bureau, the school health program is emphasized to the detriment of infant welfare work. During the year ending June 30, 1926, the Division staff assisted local physicians in 12 communities not otherwise providing routine physical examination of school children in so doing. But of 5,990 children examined during the eighteen months prior to December 31, 1926, only 149, or less than $2\frac{1}{2}$ per cent, were within the Region.[1]

A Dental Hygiene Section has recently been created within this Division, financed by the Illinois State Dental Society, with an intensive educational campaign and the stimulation of dental inspection of school children in view. The Dental Society feels that establishment of good health habits among children will cause them in adult life to continue the dental examination as routine, and so strengthen the dental profession. This attitude is in direct contrast to that of the State Medical Association. The bureaus and divisions of infant and child hygiene of the other regional states seem too preoccupied with infants, mothers, and children of preschool age to pay much attention to school health work.

For large parts of the Region the full burden of the school health program of physical examination falls

[1] Illinois Department of Public Health, *Ninth Annual Report*, pp. 9, 256, 259; also the *Illinois Health News*, XII, 260, 350–52; XIII, 131.

upon the "county nurse." It is obvious that the hundreds of one-room school districts cannot afford a school nurse for each, and they have no present means of collaboration. The Cook County Health Department examined 11,040 school children in 1927, covering 151 public and all private and cult schools; the Will County nurse examined 1,350 children in 84 of the 160 rural schools of the county during the year ended May 31, 1927; and the 3 Du Page County nurses are engaged in similar activities during the school year. Thus these 3 counties combined employ 19 nurses who perform what physical inspection takes place.

No other regional county appears to support the "county nurse" solely through general taxation. In McHenry County, where more than half the budget is borne by the local Tuberculosis Association, the nurse examined 2,200 children in 91 schools during the year ended May 31, 1927. In Lake County, Illinois, the county provides office space for the nurse, but salary and expenses are paid by private organizations; and similar situations appeared to prevail in Kankakee, Kendall, Kane, Kenosha, and Berrien counties, the nurses frequently working in conjunction with the county superintendent of schools. In La Porte County the Board of Education employs a nurse for this work, but Lake, Newton, and Porter counties make no such provision and the Lake County health officer maintains that "there is no need for any." Jasper and Grundy counties were planning to employ nurses for the autumn at the time visited (summer, 1927).

Naturally, these nurses' examinations are superficial, but they create interest in personal hygiene among the children and uncover many minor defects. Underweight

and overweight children are advised, and poor teeth, enlarged tonsils or adenoids, defective vision, are brought to the attention of the parents in a forceful way. And the work is all the more important in that it is about the only contact most rural portions of the Region have with modern public health.

Among the cities, Chicago's program is standard. Besides 60 part-time school health officers employed by the Bureau of Communicable Diseases, there are 10 school health officers in the Division of Infant Welfare, and 1 full-time and 3 part-time supervising health officers, 12 dental surgeons, dentists, and dental hygienists, and 50 field nurses besides. Moreover, until recently the Municipal Tuberculosis Sanitarium paid the salaries of 50 full-time physicians and 50 nurses who worked with the Health Department employees in the public schools, with total expenditures of the two organizations for this work exceeding $400,000 annually.[1]

The following figures are given to indicate the variety and extent of the work done by this staff. During the years 1923-25 the department health officers vaccinated 238,000 against smallpox and gave 112,000 injections of diphtheria toxin-antitoxin; the dental division, though much smaller than now, cared for over 33,000 children; and the Sanitarium physicians made 440,000 physical

[1] The reason given by the Sanitarium for dropping this work is lack of funds. In 1924, the latest year for which detailed statistics are available, the Sanitarium spent $207,000 for this special school-inspection service from a total of $1,621,000 available for operating expenditures and salaries. In 1928, with $2,380,000 available for operation and salaries, the Sanitarium announced early in the year that it could no longer afford this expense. We have already noted that most activities of the Sanitarium have been decreasing or at a standstill during recent years, despite rapidly mounting budgets.

examinations, discovering about 1,000,000 defects of which 564,000 required treatment and 44,000 immediate treatment. During 1924 the 100 nurses employed by the two organizations jointly made 60,000 school visits, inspected 564,000 pupils, made 700,000 routine inspections, had 250,000 children under care for home calls, and secured 98,000 corrections. In addition, these nurses give educational lectures and assist the physicians in vaccinations and physical examinations of a more thorough nature than those undertaken by the nurses alone.[1]

Gary's school health program, in contrast with its general health program, is remarkably good. In fact, it is probably the best in the Region, although the City Health Department has nothing to do with it. The Board of Education employs 2 physicians, 2 dentists, 3 dental hygienists, and 7 nurses, all full time. From the kindergarten through Grade 5 B every child has a thorough dental examination each year, with treatment provided when parents sign a consent card; a special department cares for mental defectives; regular classroom inspections are made; and "children in the kindergarten, first, fourth and eighth grades, all new pupils, and candidates for the athletic teams are examined by the physicians annually. . . . . All children are weighed and measured annually."[2]

Kenosha gives physical examinations at entrance

[1] Chicago Department of Health, *Triennial Report*, pp. 211–28; also Municipal Tuberculosis Sanitarium, *Biennial Report* (1923–24), pp. 85–88.

[2] American Child Health Association, *Health Survey of 86 Cities*, p. 364. According to *Financial Statistics of the Cities* (1925), Gary spent $20,637 for this work, but the cost is considerably more now. Other cities spent as follows: Kenosha, $17,297; Cicero, $13,603; Oak Park, $12,279; Evanston, $11,057; East Chicago, $7,902; Joliet, $4,379; Elgin, $3,972; Aurora, $3,169; and Hammond, $1,944.

into kindergarten, fourth grade, and seventh grade; Cicero examines all children yearly, though the examinations are said to be superficial, with no uniform procedure and no standard of what constitutes a defect; Oak Park does not examine grade pupils, but makes a complete examination of high-school students; Elgin provides medical examination for the children each year; Evanston examined over 6,000 children in 1927 (an excellent record); but East Chicago, Joliet, Aurora, Hammond, appear to rely wholly upon nurses for such work, although Aurora has good dental inspection.

The medical examinations are provided by varied personnel: Kenosha and Oak Park employ large numbers of local practitioners for short periods; Cicero has 4 part-time physicians; the Evanston schools employ physicians on a full-time basis; and so on. The number of nurses employed ranges from 2 in Hammond to 7 in Oak Park; and sometimes they are employed by the city health department, sometimes by the schools, and sometimes by private organizations. There also seems to be the widest variation as to extent and success of follow-up work, although the data on this phase is very meager.

In the smaller municipalities conditions are much less satisfactory. The words of Mr. Moore concerning the country at large illustrate this point.

> The schools of the larger cities of the United States have the best health service. Virtually all communities with a school enrollment of 10,000 or more employ a physician or nurse or both—usually both, but of communities with an enrollment of less than 1,000, only approximately 50 per cent have such health supervision.[1]

Considerably less than half of the 150 regional municipalities with under 1,000 school enrolment provide their

[1] Moore, *Public Health in the United States*, p. 248.

own school nurses. In fact, employment of a school nurse by the smaller school systems is unusual.[1] Where nursing service is available it is usually provided by a charitable organization or by the "county nurse."

In only 1 of 10 cities under 10,000 population was medical examination of school children found to be customary. Among cities from 10,000 to 30,000, Forest Park "used to have a school doctor and needs one now"; the Maywood health officer has only the assistance of 1 general welfare nurse; Berwyn provides a "screening" or superficial examination prior to admission to the schools, and also unusually efficient dental attention; Whiting, La Porte, and Wilmette have nurses who make superficial examinations; Waukegan has 2 nurses and a physician who makes examinations at the close of the school year to permit correction of defects during the summer, but the examination could scarcely be termed thorough since the entire school population is examined in the space of two weeks by one physician; Winnetka provides examinations for children who do not object, but follow-up work is not intensive. As for the rural areas, medical examination by physicians is unheard of, and the children are lucky to have the most superficial examination by the "county nurse."

IV. SUMMARY AND CONCLUSIONS

It is difficult to offer anything in the nature of a conclusion on the basis of the examination we have made of school sanitation and health instruction. However, two ideas suggest themselves upon even such a casual survey: First, the perfect feasibility of a central school

[1] Illinois Superintendent of Instruction, *Thirty-sixth Biennial Report* (1924–26), Table 43.

sanitation inspection agency for the entire Region, located in Chicago, with every one of the thousands of regional school buildings within a fifty-mile radius; and, second, the certain value of a more intimate contact, a closer integration, of the regional school system in the matter of hygiene instruction, with the establishment of a regional program and a specialized corps of instructors.

As for examination of school children by physicians and nurses, the Chicago program is much better than that for the average of the remainder of the Region, or was much better until the Municipal Tuberculosis Sanitarium withdrew its support. However, it must be noted that the school health programs of several of the smaller cities where those programs are intrusted to the boards of education have been superior to that maintained by Chicago, even at its best. This is most notable in Gary, Evanston, and Oak Park, and would seem to contradict the recommendation of public health authorities that this function should be performed by the regular health department; but perhaps these are simply exceptions which prove the rule. Moreover, when the work is in the hands of the school authorities parochial and private schools are deprived of all the benefits. Besides, the relations between city health department and the school authorities are sometimes none too cordial. The results of this failure of co-ordination are indicated in the following statement of the health officer of a city over 30,000 population, concerning the activities of the 2 school nurses: "They've got their noses in everything. The schools had a woman doctor but she knocked the Board of Health and her job didn't last long. They paid her $3,000."

After all, it may be better in the long run to concentrate public health activities of a similar nature in the hands of one responsible authority. And as for the advantages to be derived from a possible extension of the former Chicago program over the Region at large, they can scarcely be questioned. This is clearly suggested by the division of Aurora and Evanston each into two school districts, with resulting confusion and lost motion in school health work. Whether a regional reorganization of the public school systems is desirable or not, it does appear that organization of school health programs under a central regional health authority would result in a notable improvement throughout most of the Region.

CHAPTER IX

THE MILK SUPPLY

Everyone knows the close relation between infant mortality and the quality of the milk supply; and adults frequently fall victim to tuberculosis, typhoid fever, diphtheria, septic sore throat, and scarlet fever transmitted to them through the medium of milk. Protection of its milk supply is a primary health problem of the urban community, and the following measures are generally regarded as valuable in obtaining such protection: (1) assurance that the milk comes from healthy cows; (2) maintenance of sanitary conditions on the dairy farms; (3) rigid sanitary control in pasteurization and distribution plants; and, less important, elimination of all diseased milk-handlers.[1]

I. ERADICATION OF BOVINE TUBERCULOSIS

Only in recent years has the extent of this infection among cattle been recognized; but complete eradication appears possible through the extended application of present measures. These consist of testing each dairy animal for the disease and destruction of those found infected, with the owners receiving some compensation from "the government" for each animal destroyed.

The federal government, acting through the Bureau of Animal Industry in the Department of Agriculture, was the main initiator of this work. It appropriates large sums for research; furnishes the tuberculin used in

[1] See McCombs, *City Health Administration*, pp. 205-31, and *United States Public Health Service Bull. 164*, pp. 397–429.

testing; employs persons to assist in testing; and helps the states and local governments indemnify owners of cattle condemned, bearing one-third of the loss up to certain maximum amounts whenever local authorities co-operate in the payments and the owners comply with legal regulations. Appropriations for these purposes for the fiscal year of 1928 approached $6,000,000.[1]

This federal leadership has finally brought about the co-operation of every regional state government in this work, although until 1925 Illinois was violently opposed to the whole program. The 1928 appropriations of the four states for eradication of bovine tuberculosis were as follows: Illinois, $1,000,000; Wisconsin, $1,050,000; Indiana, $100,000, supplemented by county appropriations; and Michigan, $250,000.[2] Up to June 30, 1926, about one-fourth of all the work done in the United States had been in these four regional states, 315,691 herds had passed one test, and 7,628,069 cattle had been examined.[3] The campaign seems to have borne good fruit, for the percentage of reactors has steadily declined; and several regional counties have 75 per cent of their herds tuberculosis free.[4]

But, until recently, any progress in this direction has been in the face of determined opposition in the Illinois state legislature. Not content to remain inactive, the state forbade local authorities to take any steps; and since Chicago has long been anxious to better its milk

[1] *United States Statutes at Large*, XLIV, Part II, 505–6, 982–83.

[2] State Session Laws (1927).

[3] United States Department of Agriculture, *Yearbook of Agriculture* (1926), pp. 1090–91. Also known as *House Document No. 660* (69th Congress, second session).

[4] *Indiana Yearbook* (1926), pp. 1129–30; Illinois Department of Public Health, *Ninth Annual Report*, p. 34.

supply this resulted in one of the most striking clashes between state and city in Illinois public health history. The following law, passed in 1911 and still theoretically in force, illustrates the attitude of the rural-minded state legislature.

> It shall be unlawful for any city, village, incorporated town, county, or other corporate authority in the State of Illinois by ordinance, rule or regulation other than may be established by the law of this State, to demand, fix, establish or require the tuberculin test to be applied to dairy animals as a means or measure of regulating and purifying milk, skimmed milk, cream and dairy products of said animals in any manner whatever, and every such ordinance, rule, by-law or regulation heretofore or hereafter passed, demanded, fixed, established, or required by any such city, village, incorporated town, county or other corporate authority other than the State of Illinois, is hereby declared to be void and of no effect.[1]

But in 1925 Chicago mutinied. Apparently bound hand and foot by the foregoing statute, enacted by a legislature in which downstate maintains an unconstitutional majority, the Chicago health commissioner nevertheless proposed to bar all milk not coming from herds tested for tuberculosis. A roar of protest came from the downstate dairymen. They raised a large defense fund and secured an injunction restraining the commissioner from putting the order into effect. The commissioner refused to withdraw the order, even in the face of the court order, and declared he would rather be imprisoned than yield. He said, "If it is within my power I'm going to see that every drop of milk that my six children and the milk that other children drink in the City of Chicago is safe and pure if I have to go to jail to do it."[2]

Obviously, there is political dynamite in such a con-

[1] Smith-Hurd, *Illinois Statutes* (1927), chap. viii, sec. 105, p. 146.

[2] *Chicago's Health*, XXI, 105.

troversy, and the dairy interests did not want to force the issue by making the health commissioner a martyr. Their hesitancy was increased by his threat of having his jail cell equipped with a microphone so that he could broadcast a statement daily; and, finally, the opposition gave way, the injunction was withdrawn, and Chicago had won a clear-cut victory. The decree went into effect, and the health commissioner was awarded the *Chicago Daily News* prize of $1,000 for having "performed the most beneficial action or done the most beautiful thing for humanity" during the year.[1]

The effect of Chicago's victory was electric. Dairymen began a mad scramble to meet the requirements of the Chicago market. And well they might, for previously 45,000 quarts of raw milk infected with living germs of tuberculosis had been brought into the city daily. One-fourth of Chicago's milk had come from McHenry County, and subsequently 80 per cent of the cows in that county were shown to be tuberculous.[2] Loss of their herds imposed a real hardship on the farmers as compensation was by no means complete, but they could find no effective answer to the commissioner's argument that it was the lives of the cattle against the babies' lives. Conditions resulting from the Chicago order in Wisconsin are described in the 1927 *Wisconsin Blue Book* as follows:

> Since January 1, the most extensive program of work ever undertaken in this state was started and carried through to a successful conclusion. The need for this large program was brought about by the action of the City of Chicago, in requiring that after April 1, 1926, all herds supplying that city with milk or cream must have been tested and tuberculous animals removed. . . . . Altogether

[1] *Chicago Daily News Almanac* (1927), p. 264.

[2] *Chicago's Health,* XXI, 104; XX, 237.

150,000 cattle, belonging to Wisconsin dairymen, selling milk and cream to Chicago, were tested in the sixty-day period, beginning February 25, 1926. . . . . In two counties not less than 45 per cent of the animals examined were found to be tuberculous. A total of 20,000 reactors were disclosed by the so-called Chicago market tests.

Issuance of the Chicago edict seems to have produced beneficial results. The number of market samples containing more than the legal limit of bacteria was from 6.4 to 21.7 per cent less after the new regulation than before; and Chicago's infant mortality rate fell from 74.8 to 66.8 in a single year.[1] The stringent rules adopted by Chicago were quickly imitated in Cleveland, Detroit, Milwaukee, and Baltimore.

Moreover, the Chicago victory exerted a profound influence over the surrounding municipalities, particularly those with alert health departments. Thus we find it reported that "many of Chicago's suburban cities, such as Evanston, Oak Park, Cicero, Waukegan and Winnetka, whose milk supply was largely that rejected by Chicago, have adopted the same regulation requiring all milk to come from healthy cows."[2]

This statement brings out another fact vital to a consideration of a regional health program. Many dairymen forced out of the major markets and refusing to test their herds because they well know they are spotted with tuberculosis have turned to smaller municipalities, unprotected by health departments worthy of the name, for a market outlet. Is it in the least surprising that the infant mortality rate for "rural areas" is declining much more slowly than the rates for Chicago and the "other cities"? Chicago's gain has been partly offset by the

[1] *Ibid.*, XX, 238. [2] *Ibid.*, XXI, 104.

injury to the remainder of the urban community through lack of proper health protection; Chicago's action has not been so successful as it would have been if extended over the whole metropolitan community.

II. DAIRY-FARM INSPECTION

The Chicago market is supplied with milk from farms in seven states, including Ohio, Minnesota, and Iowa. The states have not provided inspection services, so that in self-defense Chicago must enforce its own sanitary standards upon the producers. Therefore the city employs 33 dairy-farm inspectors and 1 supervisor; each dairy farm supplying Chicago milk must hold a permit from the Health Department; and each farm is visited on an average of once each seven months and carefully inspected, score-card forms being used for this purpose.

Because of these strict requirements and enforcement methods, one of the best tests of the quality of a milk supply is whether it comes from dairy farms holding Chicago permits. Consequently, many of the satellite cities try to get their milk from the same farms, assuring complete safety without expenditure of time or effort. To prevent this "sponging" tendency the Chicago Health Department requires that 75 per cent of output of dairies or plants holding Chicago permits be available to Chicago upon demand; but still the director of the Chicago Department of Dairy Products estimates that between 150,000 and 200,000 of the million or more suburbanites obtain their milk from farms or plants holding Chicago permits. These persons reap the benefit of Chicago's alert health program absolutely without cost.

All of the larger regional cities maintain some sort of inspection service; only half of the cities of 10,000 to

30,000 visited reported systematic inspection of dairies; and among 15 cities of less than 10,000 visited only 2 inspect dairies regularly. Moreover, only local dairies are inspected in almost every case; and there is no check upon distant farms from which milk is obtained. Frequently the only inspection is that of the plants where the milk is brought for pasteurization and distribution, with absolutely no check upon the source farms. The 1925 *Illinois Health Appraisal of 15 Cities* states that in milk control "the chief shortcoming in the 15 cities generally is a lack of inspection service. . . . . A properly trained milk sanitarian is an extremely valuable asset to the public health service staff in any sizeable city."[1]

These conditions exist in spite of the moral stimulus of the Chicago example. As the American Child Health Association Health Survey of 86 cities between 50,000 and 100,000 notes:

> The close proximity of some of these cities to a larger community introduces a new element in their sanitary problems. In many matters the larger city acts as a big brother, protecting the smaller one from certain dangers. For example, if the larger community exercises careful control over the milk supply, including dairy inspection and distribution, the sanitary standard of milk production throughout the entire milk supply production area will be raised. It only remains then for the smaller city to adopt regulations closely paralleling those of the larger city to render their milk control program relatively simple.[2]

But actually, very few of the smaller jurisdictions have established the regulations already in force for Chicago, simple as such action would be. While no one of the smaller communities could control the situation without Chicago's help, since the larger market would always be

[1] *Illinois Health News*, XII, 157.

[2] *Chicago's Health*, XX, 200–201.

available, they could do their part easily enough now; but they seem to lack initiative and leadership.

III. PASTEURIZATION AND DISTRIBUTION

This is probably the most important phase of milk control, because while milk from unsanitary farms and diseased cattle may be made drinkable through pasteurization, milk which is pure and wholesome when it reaches the plant may become thoroughly infected in the process of distribution. Absolute safety requires pasteurization, except in the case of "certified" milk, which constitutes a very small proportion of the total consumed.

Federal activities in this field have been extensive but unco-ordinated. The Public Health Service, after study of milk-borne epidemics in 700 cities, has prepared a revised standard milk code for cities and states; it has worked out a system of ratings and applied it in numerous cities; and in co-operation with interested agencies in the Department of Agriculture has reduced the diversity of law and practice which previously existed. The Food and Drugs Division of the Bureau of Chemistry, assisted by the Dairying Bureau, has sought to prevent transportation of unwholesome milk in interstate and foreign commerce. An indication of the failure to co-ordinate federal effort here is evident, however, in the different definitions of "pasteurization" by the Public Health Service, the Department of Agriculture, and the Navy Department, as well as in the overlapping of publications in the field.[1]

All four regional states forbid the sale of unwhole-

[1] United States Public Health Service, *Annual Report* (1927), pp. 58 ff.; Leigh, *op. cit.*, pp. 392, 343 n.; Tobey, *op. cit.*, pp. 141, 211, 263.

some, unsanitary, or adulterated milk, and the provisions frequently extend to butter, cream, and cheese. Pasteurization requirements are very different however. Illinois simply requires non-pasteurized milk to be produced under sanitary conditions; and Indiana requires milk from cows not tuberculin-tested to be pasteurized if sold within the state, but there is no provision concerning milk produced in Indiana and shipped into Illinois.[1] Efforts by the four states at enforcement have had little regional significance until very recently, however, and their work will be discussed after that of the local authorities has been given consideration.

There are nearly 250 pasteurization plants in Chicago, which are regularly supervised and inspected by 9 city milk-plant inspectors. Moreover, the city has had to extend its operations outside its legal boundaries in this as in other connections, and 5 county milk-plant inspectors are at work watching the plants in suburban areas in Cook County. There are also 3 supervisors in charge of the work. The following statement reviews the steps taken:

> The Chicago Health Department has made regular inspections of milk-pasteurization plants since 1916, when steps were taken to more definitely enforce the pasteurization ordinance adopted by the city in 1908, and more systematic, detailed and thorough inspections were started during the present year [1926] when the sanitary control of the city's milk supply was placed under the immediate charge of engineers and technical graduates experienced in milk equipment, engineering and sanitary science.[2]

Chicago's milk supply is $99\frac{1}{3}$ per cent pasteurized, and the remaining $\frac{2}{3}$ per cent is certified. Moreover, a con-

[1] Smith-Hurd, *op. cit.*, chap. $56\frac{1}{2}$, secs. 101–13; Burns, *Indiana Statutes* (1926), secs. 3650–51.

[2] *Illinois Health News*, XII, 319.

stant check is made upon distributors by testing samples taken from the wagons or the plants at irregular intervals, with the result that the percentage of samples showing a bacterial count above the legal limit has steadily declined since 1923. It may be partly due to these activities that deaths among children under two years from diarrhea and enteritis have also been declining. Chicago has also recently established control over the forty-one wholesale ice-cream manufacturers in the city, with a consequent reduction in bacterial counts in that product.[1]

This situation is somewhat in contrast with conditions elsewhere in the Region. Although pasteurization is said to be from 95 to 100 per cent complete in all cities of the Region over 30,000, the degree of supervision is not generally up to the Chicago standards. In East Chicago it was said that "pasteurization is controlled but there is nothing official," and the Hammond health officer said he did not know who supervised pasteurization, but supposed the state did. In checking samples many of these cities also varied from Chicago practice. Although Gary, Evanston, Joliet, and Aurora take bacterial counts weekly, and Aurora daily where conditions are unsatisfactory, East Chicago and Kenosha make tests only bimonthly, Elgin and Oak Park only monthly, Cicero "perhaps" every two or three months, and Hammond "now and then, as necessary." Samples are usually taken from the wagons, but Cicero gathers them at the depots, allowing further opportunity for malpractice. The 5 regional Illinois cities of this class examined in the 1925 *Illinois Appraisal* were above the Illinois

[1] Chicago Department of Health, *Triennial Report*, p. 518; *Chicago's Health*, XXI, 103, 107.

average in milk control, but partly because they obtain milk from the same sources as Chicago and Chicago insists upon high standards. Even so, of a possible score of 35 in milk control Evanston received 22; Oak Park, 11; and Aurora, Joliet, and Cicero, 4, 3, and 1, respectively. Perhaps in part owing to the vigorous criticism received in this *Appraisal*, Cicero passed a stringent milk ordinance in March, 1927, but this study was prepared too soon to check upon the results achieved under it.

Pasteurization is fairly, though somewhat less, complete among the cities from 10,000 to 30,000; but supervision of pasteurization by the municipal authorities takes a decided slump among them. Winnetka maintains a high standard in this regard, and the health officers of Forest Park and Berwyn supervise pasteurization for those cities personally, but Maywood's supply is "identical with that of Chicago" and so does not require pasteurization supervision; Waukegan's supply is wholly unpasteurized but "is certified and meets state requirements"; Michigan City's milk is but 50 per cent pasteurized; Harvey maintains no supervision of pasteurization; and the Wilmette health officer said all milk was pasteurized, "as far as I know." As for checking distribution, Whiting makes bacterial counts monthly, Michigan City "periodically," Forest Park about four times a year, Berwyn twice a year, but the Wilmette health officer did not know what was done in his jurisdiction.

In the smaller municipalities the percentage of milk pasteurized is much lower. Thus, a study by the Illinois Health Department reveals that while all Illinois cities over 25,000 had at least 1 pasteurization plant, only 85 per cent of cities from 10,000 to 25,000 had; and in cities

from 5,000 to 10,000 the percentage was 72, in cities from 1,000 to 5,000 it was 19, and in municipalities under 1,000 it was only 2.6. Only 50 of the 175 municipalities of regional Illinois have pasteurization plants; they must either receive milk from plants outside their jurisdiction or else consume raw milk. Where pasteurization is done, moreover, local supervision is rare, the smaller health departments seeming not in the least perturbed by this problem. As for checking the supply as it reaches the consumer, only Batavia and St. Charles of the cities of that class visited made such tests, the former bi-weekly and the latter semiannually. Des Plaines, Brookfield, Crown Point, Lockport, Huntley, Crystal Lake, River Forest, New Buffalo, and Valparaiso make no such counts. Lake Forest urges in extenuation that Chicago tests its supply source.

These conditions clearly reveal the need for some central regulation of milk supply and distribution outside of Chicago and a few of the larger cities of the Region. Realizing that, as a health-department publication remarked, "sanitary supervision in most cities of Illinois has been practically nil" in this regard, the Illinois Division of Sanitary Engineering and the Division of Foods and Dairies have established some supervisory control over the 306 pasteurization plants outside the Chicago city limits.[1] Lack of control by any health agency was cited as a principal reason for many defects noted in the sanitary conditions and sterilizing equipment of these plants, when first examined in 1926. As yet the state makes no effort to inspect dairies or check samples of milk being distributed.

Wisconsin and Indiana have made some effort to en-

[1] *Illinois Health News*, XII, 317–30.

force sanitary dairy standards by state supervision. Wisconsin, especially, maintains 14 inspectors in the field at all times, in 12 inspection districts; and licenses every creamery, cheese factory, receiving station, and condensery. Moreover, the commissioner of food and drugs appoints a special inspector of sanitary conditions in each dairy and handling plant.[1] The Indiana Food and Drug Department, under the State Board of Health, does some dairy inspection, but in 1926 it examined only 223 dairies, 141 milk plants, and 718 cream stations, together with some creameries and ice-cream stations.[2] Obviously, not all the plants or dairies were examined during the year, and Chicago's standard of inspection each seven months for dairies and more frequently for pasteurization plants and distribution companies is not even approached. Although Indiana maintains a State Milk Laboratory, the regional cities are too distant from it to find it helpful in making any routine examination of milk samples. Discussion of extending Chicago's laboratory facilities throughout the Region will be undertaken in a later chapter.

IV. EXAMINATION OF MILK-HANDLERS

Illinois, like most states, requires all employees of pasteurization plants to be examined for tuberculosis and venereal diseases; but the above-mentioned 1926 survey disclosed that of the 306 plants outside of Chicago only 1 had complied with the law. There is a general failure to enforce this ruling everywhere in the country, and its necessity seems to be in question.

[1] *Wisconsin Blue Book* (1927), pp. 318-20; *Wisconsin Statutes* (1927), sec. 98.08.

[2] *Indiana Yearbook* (1926), p. 581.

About the only effort in this line is to keep the milk free from contact with persons carrying typhoid fever, diphtheria, scarlet fever, or septic sore throat germs, and such effort is usually confined to local authorities who act only after an epidemic is in progress and has been traced to the milk supply.

V. SUMMARY AND SUGGESTIONS

The urban community which is the Region of Chicago receives its milk supply from widely scattered sources; the economic organizations which collect, pasteurize, and distribute the supply frequently serve two or more of the 200 municipalities into which the Region is divided by law; and there is no central control, supervision, or inspection of this process. These are the basic facts of this discussion of milk supply for the Region.

The facts bearing upon Chicago are in marked contrast. In spite of strenuous opposition in the state legislature, Chicago now requires all milk sold within its borders to come from tuberculin-tested cattle. Chicago maintains a far-flung inspection system operating over seven states, which seeks to assure its citizens that milk sold in Chicago comes from clean dairies and is handled according to sanitary standards. Moreover, Chicago maintains a constant supervision of pasteurization plants both in Chicago and in suburban Cook County, and tests thousands of samples of milk as it reaches the consumer to make sure that his interests are well guarded.

May we suggest the complete ease with which Chicago's whole program of inspection, supervision, and control, and Chicago's requirements concerning testing of dairy cattle for tuberculosis, might be applied to the

entire urban Region, as far as administrative problems go? Aside from legal and jurisdictional matters, the extension of the Chicago program seems perfectly simple. It would be easy to place these plants under Chicago's present supervisory system.

Already the Chicago dairy inspectors travel over seven states; already the pasteurization plant inspectors go outside the city limits; already the edict concerning tuberculin-testing of cattle has had profound effects upon dairying in surrounding states; and already the Chicago laboratories are testing over 9,000 samples of milk taken from the wagons and plants each year, and doing it cheaply and effectively. The inspection of dairies and milk plants is not costly, either, when carried on upon so grand a scale. The 1928 Chicago budget provided $151,000 for salary expense in this connection, but the city consumes about 550,000,000 quarts of milk daily, so that the cost is less than $0.0003 per quart, or about one-five-hundredth of the retail price. And insistence upon the tuberculin-testing costs the city practically nothing; all that step required was determination and effective leadership. There are, in Illinois alone, within fifty miles of the Loop, 116 pasteurization plants producing over 90,000 gallons daily, which are outside of Chicago.

Numerous factors present in other phases of the regional public health problem reappear here. One is the inability of any one of the jurisdictions to control the hydra-headed dairy and distributing interests of the Region single handed; control to be successful must be concentrated in far fewer hands. Again, the clear-cut schism between urban and rural interests appears in bold relief, in the matter of tuberculin-testing. Also, in

the matter of testing, the federal government stands as the really stimulative and directive force, with the states in the rôle of followers rather than leaders. Once more, where even the more alert of the larger suburbs have taken progressive steps, whether in respect to testing requirements, pasteurization, dairy-farm inspection, or distribution checking, the steps are in the main imitative of a superior Chicago program previously in force. And here also the satellite cities shelter themselves behind Chicago's stout breastworks, in very large measure.

Control of milk supply is simply another case where Chicago stands foremost in the order of excellence in the Region, followed successively by the larger cities, the cities of 10,000 to 30,000, and the "rural areas." There is no question that the sanitary engineer of the Cook County Health Department was right when he reported, on December 1, 1927, that "public milk supplies of municipalities outside the city of Chicago constitute a great, scarcely touched, field for public health engineering activity." The inability of the latter to cope with the problem in any serious way has brought the State Health Department machinery to bear, with the apparently inevitable result that Chicago continues to maintain its own inspection and control program, and is also called upon to bear its proportionate share of the burden of protecting the milk supplies of the remainder of the state of Illinois, including the regional suburban areas.

Moreover, it appears that the difficulties stated are inherent in the present governmental health structure. If Cicero inspects all dairies and plants which produce milk for her market, there is a duplication of effort with

Chicago, for many of the plants supply both cities. And when we include Evanston, Oak Park, Berwyn, and others for some three hundred jurisdictions, the waste involved in unco-ordinated effort is surely clear. But if, on the other hand, Cicero tries to avoid responsibility and does nothing, trusting to Chicago's officers to protect her population, "there is no assurance that other [than Chicago] dealers do not retail milk, or that the Chicago dealers do not dispose of products that might be unacceptable to the inspectors in that city."[1] The only reasonable solution seems to lie in amalgamation of inspection services and centralization of control over the entire metropolitan milk market.

[1] This statement was made in the report of the 1925 *Health Appraisal of 15 Illinois Cities*, in connection with the actual situation then existing in Cicero (*Illinois Health News*, XII, 174).

CHAPTER X

THE FOOD SUPPLY

The federal Food and Drugs Act of 1906 was passed because the states acting separately had sadly failed to solve an acute health problem. Such intrusion into the field of police powers might once have been considered presumptuous, but after the unwillingness or inability of most of the states to protect their several populations had been completely demonstrated, popular opinion applauded the action. Stimulated by the resultant publicity many of the states took similar steps; but the federal government had to strike the keynote of the campaign, and the present plan of control centers about its activities. Therefore, in this chapter we shall depart from our usual procedure and discuss the work by governments rather than functions.

I. THE FEDERAL GOVERNMENT

Its functions are three: publicity, research, and regulation of interstate and foreign commerce. The Federal Board for Vocational Guidance and eight federal bureaus publish pamphlets concerning the care and use of food, and federal authorities keep close watch upon such new developments as the transmission of typhoid fever through the medium of shellfish. Food imports are regulated by the Customs Service; and the bureaus of Chemistry, Animal Industry, and Agricultural Economics regulate foods in interstate commerce.[1]

[1] Tobey, *National Government and Public Health*, p. 362; Leigh, *Federal Health Administration in the United States*, pp. 350–52, 341, 348.

Federal control is carried to greatest lengths in the case of meats. No less than 2,700 federal officers examine animals before slaughter and inspect the entire packing process in plants which ship meats in interstate commerce, including all of the great Chicago packing-houses. Congress has not yet extended such rigid control to other food industries, but the Food and Drugs Division of the Bureau of Chemistry does maintain casual supervision over plants which accept it. When plants refuse permission, the Division keeps a sharp eye upon their products.

II. THE STATE OF ILLINOIS

The Division of Foods and Dairies of the Department of Agriculture, with an annual budget of $261,000, is the most important Illinois agency at work, though the Department of Public Health occasionally issues related regulations. The Division employs 49 food inspectors and 3 farm-produce investigators, to enforce Illinois' stringent sanitary requirements in the handling of foods, and this personnel made 57,718 inspections and destroyed 700,000 pounds of food in the last reported year. The Division also licenses dealers in eggs and ice-cream, and cold-storage plants, with receipts of $88,000 per year. It also inspects operations of all meat-packing plants in the state outside Chicago which escape federal control because their business is wholly intrastate.[1]

It is notable that this Division, in the interests of efficiency, has established offices in Chicago. Although only 14 of the 49 inspectors are employed in the coun-

[1] Illinois Department of Agriculture, *Ninth Annual Report*, pp. 15–18; Illinois Department of Public Health, *ibid.*, p. 11; *Laws of Illinois* (1927), pp. 115–16; see also Smith-Hurd, *Illinois Statutes* (1927). Several facts were obtained through the courtesy of the chief inspector of the Division.

ties of Cook, Lake, and Du Page, 7,900 samples were analyzed in the Chicago laboratory, compared with 2,500 in Springfield; 1,500 hearings were held in Chicago and 133 in Springfield; and $4,500 in fines was collected in Chicago as compared with $125 downstate, all in the last year reported. Naturally, it is hard for the Division to prevent duplicating the work of the Chicago Bureau of Food Inspection; but in general the Illinois Division concentrates upon misdescription, misbranding, and other frauds, while the Chicago Bureau specializes in sanitary inspections. However, it is practically impossible to avoid overlapping in such a case, and the state division frequently makes sanitary inspections in the city, especially of cold-storage warehouses.

III. THE STATE OF INDIANA

Unlike Illinois, Indiana places food inspection under the State Board of Health, although the entire annual appropriation for that agency is $180,000. Naturally, this prevents maintenance of an adequate program, although during the last reported year 16,000 food establishments were inspected, with 530 in poor and 34 in bad sanitary condition. There were 3,400 food samples analyzed, with 35 per cent found to be illegal; and 37 court prosecutions were instituted. There is no provision for state inspection of packing plants, although sale of unwholesome meats is forbidden.[1]

State law requires standards of quality and forbids misrepresentation in legal terminology suggested by the federal law; but the responsibility for enforcement seems to be unhappily diffuse. While the local authorities are

[1] Burns, *Indiana Statutes; Acts of Indiana* (1927); and *Indiana Yearbook* (1926).

supposedly subordinate to state, there seems to be no central direction of local effort. The law provides that

> it shall be the duty of the state board of health to enforce this act, and, for that purpose, the state, county, city, and town health officers shall be food inspectors subordinate to the state board of health. The state food and drug commissioner, the food inspectors of the state board of health, the state, county, city and town health officers shall have full power at all times to enter every building, room, basement, or cellar. . . . .[1]

IV. WISCONSIN AND MICHIGAN

In Wisconsin the main burden of sanitary supervision of food supplies falls upon the state, although local authorities are ordered to co-operate in minor matters. While there are but 5 state food inspectors, each assigned to a special area, they made over 10,000 inspections in the last reported year. Bakeries, bottlers, canning factories, cold-storage warehouses, ice-cream factories, and confectioneries are licensed after approval of the examiners.[2]

Much the same rules are in force in Michigan as in the other three states. As in Illinois, food inspection is done by the Department of Agriculture, but otherwise Michigan enforcement methods present a distinct picture. They will not be here described, however, as most of the foodstuffs entering the Region from Michigan are in interstate commerce and so fall under the federal jurisdiction.[3]

V. CHICAGO

The Chicago Bureau of Food Inspection concentrates upon sanitary conditions in retail shops, leaving fraud

[1] Burns, *op. cit.* (1926), sec. 8210.

[2] *Wisconsin Statutes* (1927) and *Wisconsin Blue Book* (1927).

[3] *Compiled Laws of Michigan* (1915) and *Public Acts of Michigan* (1921 and 1927).

complaints to state officers and complaints due to poor processing to federal authorities. This is one of the very few cases of voluntary co-operation among regional health agencies discovered in this investigation. Its efficacy is lessened by the federal inability to control goods not in interstate commerce; it does not affect the 1,500,000 persons who live in the Region outside Chicago; and the fact of its uniqueness in the Region does not suggest any probability that much progress will be made in this direction in other fields. Still, it is of interest, because it shows that the only reasonable line of division in regional health matters is functional rather than by areas of control.

All retail food dealers must be licensed annually, and additional examinations are made quarterly. Retail meat and fish markets, groceries, bakeries, delicatessen stores, ice-cream and beverage parlors, restaurants and lunchrooms, candy and drug stores, roadside stands, and food-peddling outfits are inspected. Chicago's 30 food inspectors made 169,866 inspections in 1925, or three times as many as the state of Illinois, ten times as many as Indiana, and seventeen times as many as Wisconsin for the last reported years, in each case. Notices served numbered 51,890 and abatements secured 44,812.

Moreover, wholesale food establishments are regularly inspected. Four inspectors keep watch at the 3 great city markets; and 5 constantly check canned goods, of which over 700,000 pounds are condemned annually. Chicago dealers are anxious that the goods be inspected upon arrival, as in that way they escape payment in cases of condemnation.

The city also supervises the 4 slaughter-houses which do a strictly local business, inspecting about 280,000

and condemning about 7,000 animals in an average year. Also, an average of about 230,000 country-killed carcasses presented for sale in city markets is inspected each year, with an average of about 500 condemnations. In 1927 city inspectors condemned 8,958 animals, weighing 1,381,325 pounds. Poultry and game are usually condemned to the extent of 300,000 pounds a year or more. Taking all foods together, the city destroys very nearly 3,000,000 pounds annually—a program not approached by any other local jurisdiction in the Region.[1]

VI. THE MAJOR SUBURBS

Each of the 10 regional cities with more than 30,000 inhabitants maintain a plan of food inspection, and several place a surprising emphasis on this work in the light of their meager efforts in other directions. Our data in this respect are incomplete, but are offered for what they are worth. Evanston has 2 inspectors who made 4,400 investigations and collected 2,500 samples in 1927 (although this includes milk control); Kenosha makes careful sanitary inspections, although only 1,400 pounds of food were condemned in 1926; Gary's 1 food inspector made over 3,000 calls in 1926, and tries to cover each locality quarterly; Elgin's sanitary health officer made 800 inspections in 1926; East Chicago has 2 food inspectors; and Cicero makes a semiannual and Oak Park a bimonthly inspection. Detailed information was not available for Hammond or Joliet, but an impression of general laxity was obtained—an impression verified as to Joliet by reference to the results of the *Illinois Health Appraisal of 15 Cities*, which showed Joliet fourteenth in the matter of food control.

[1] Chicago Department of Health, *Triennial Report*, pp. 483, 504 5, 495, 498, 508; *Chicago's Health*, XXII, 96, 114.

VII. THE MINOR SUBURBS

Chicago employs only 30 food inspectors, or 1 for each 100,000 population, so we cannot expect a city of 10,000–30,000 to employ a full-time food inspector. Nor do they. Of 10 such cities visited only Winnetka had a systematic check on retail food markets, and the health officer (a full-time expert) did the work himself. Maywood, Waukegan, Forest Park, Harvey, Michigan City, La Porte, and Wilmette take steps only on complaint. The director of the Berwyn Health District said that the city inspector (not under his control) did this work; but the inspector, when interviewed, said the state did all such work in the absence of complaint. In Whiting the health officer said that the state food commissioner did all checking; that if the city wished it might hire an inspector, but that there was no connection between cities and state in this work.

VIII. THE INSIGNIFICANT JURISDICTIONS

Only 4 of 15 places visited had any systematic supervision: the Valparaiso city clerk makes investigations in hot weather; Des Plaines makes investigations every four months; Zion quarterly; and St. Charles monthly. The St. Charles health officer seems to have a mania for two things: food inspection and prevention of hay fever by cutting weeds on vacant lots, to the exclusion of more serious public health problems.

In the other 11 places no active local supervision existed. The general attitude of health officers was expressed by one, who said, "There really is no supervision. A state man comes in once in a while. He never does anything. There's nothing much wrong, anyhow." Anyone who believes the last statement is welcome to

eat in several small-town restaurants in an honest effort at verification.

In the completely rural areas there is no supervision at all. The sanitary engineer of the Cook County Health Department declares the need for control over the thousands of roadside stands, eating-houses, and soft-drink establishments which blossom profusely along the Region's highways. Usually they are outside any municipality's jurisdiction, and there is no guaranty of their sanitary condition.

Because any one of these smaller jurisdictions is insignificant when considered separately, it must not be thought that they are insignificant as a group. They contain well over half-a-million inhabitants. Still, they are quite without any local inspection service in almost every case.

IX. CONCLUSIONS AND SUGGESTIONS

First of all, it is elementary that the problems involved in food control in a metropolitan area differ widely from those in a rural area. Huge wholesale and storage establishments, factories and packing plants, concentrated foreign and negro populations, make rigid control doubly necessary but doubly difficult. The Illinois state organization recognizes this in the creation of a separate unit for the three counties of Cook, Lake, and Du Page.

In the second place, the larger suburbs as a group employ more food inspectors according to population than does Chicago; but Chicago seems to maintain a much more effective organization from the point of view of accomplishments. The number of inspectors employed by the larger city permits specialization, super-

vision, and uniformly better results. Inspectors in the smaller cities are largely thrown upon their own initiative, and are frequently spoils appointees who have neither the inclination nor the ability to construct a well-rounded program and then execute it, entirely independent of any authority outside themselves. There is, consequently, the widest diversity of practice in administration among the local officers of the Region; their programs lack balance and intelligent direction.

The third conclusion has been reached so frequently in this study that its repetition entails the risk of being thoroughly banal. Still, it is true here, as elsewhere, that the smaller jurisdictions are far below the standards maintained by Chicago, or even the larger suburbs.

Finally, while voluntary co-operation is possible between some of the larger regional authorities, at least, the results clearly demonstrate the limitations involved in any such attempt to solve the problem. Is it logical to have the federal inspectors supervise the great packing establishments engaged in interstate commerce, the Chicago inspectors supervise the four concerns wholly engaged in doing local business, the Illinois inspectors supervise the plants in Elgin and Aurora which engage in solely intrastate commerce, while across the line in Indiana packing plants or slaughter-houses are practically without supervision? Moreover, although the existing division of labor between Chicago, Illinois, and the federal government leaves Chicago fairly well protected, the remainder of the Region is without any such competent control. Also, overlapping is bound to occur in such cases, and has occurred. Duplication of effort and division of responsibility seem to constitute two horns of an inescapable dilemma. Establishment of state

machinery in such circumstances is not a thorough solution, for where local control is efficient a state department is superfluous, and the cases where local control is inefficient or lacking are so numerous that the state department cannot cope with them unless much larger funds are placed at its command. And, even then, the inequity of the double taxation borne by the more alert and enterprising communities makes this solution still less desirable.

Our suggestions are two in number. The first may seem impossible of fulfilment, but it is certainly interesting as a possibility. It is that if the Region of Chicago were made a separate state, nearly all of the food consumed in it would be in interstate commerce and subject to federal control, since the Region produces a very small portion of its food supply. This would certainly be one means of simplifying regulation. The second suggestion involves the co-ordination of all the local food-control organizations now operating independently in the Region into one centralized force. This step would be perfectly simple, as the Chicago Bureau of Food Inspection constitutes the basis for such a force ready at hand. This consolidation would provide the intelligent direction now so sadly lacking among the smaller communities, and at a cost no greater than that now borne by them for much less effective service.

CHAPTER XI

WATER AND SEWAGE

However distasteful the thought, water supply and sewage disposal are inseparable problems. Obtaining water uncontaminated by sewage, and disposing of sewage without contaminating the water supply, really constitute a single problem. Especially is this true in a metropolitan area, with scores of jurisdictions each seeking a solution for itself, selfishly oblivious of its neighbors' interests.

But individual effort is foredoomed to failure when the jurisdictions are so closely packed together as in the Chicago Region. There are 25 municipalities fronting Lake Michigan; 16 more within five miles of the lake front; and some 160 others most of which are within twenty miles. Sources of water supplies for some of them constitute sewage outlets for others; they are distributed among four states between which there is little co-operation; and disagreeable consequences are inevitable.

I. SEWAGE OUTLETS

Most regional communities with sewer systems solve the fundamental problem of an outlet very simply, by discharging the sewage, frequently untreated, into the nearest stream or lake. Even when the health hazards are somewhat reduced by partial treatment, the results are nauseating; streams of natural beauty, ideal for recreation purposes, have become repulsive cesspools.

In the Region of Chicago there are 102 municipalities in Illinois, 13 in Indiana, and 1 in Wisconsin which have

sewer systems. Of those in Illinois 70 treat the sewage in some one of 28 different methods; but in Indiana only 4 of the 13 do so, and Kenosha also discharges raw sewage. A general idea of the pollution in the Region's lakes and streams may be obtained from Table XIX, showing the number of municipalities discharging raw or treated sewage, respectively, into the bodies of water indicated.[1]

Since about 80 per cent of the Region's population obtains its water from Lake Michigan, it is interesting to note that part at least of the sewage turned into the Calumet, Little Calumet, and Grand Calumet rivers flows directly into Lake Michigan, together with all the discharge from the Indiana Harbor Ship Canal, Travis Ditch, and Salt Creek (Ind.). Thus no less than 34 municipalities turn their sanitary sewage directly or indirectly into Lake Michigan, 21 raw and 13 treated. Six of these cities have from 10,000 to 100,000 population, and Chicago is absolutely without legal control over them because they lie in other states. And most of the remaining lakes and watercourses of the Region are heavily polluted.

The worst conditions prevail in the Calumet district, which includes all or part of 14 municipalities lying south and east of Chicago. The district contains a rapidly growing population, already in excess of 300,000 and divided about equally between Illinois and Indiana. Under natural conditions the area was drained by the

[1] Data obtained through the courtesy of the Illinois Department of Public Health, Division of Sanitary Engineering, and of the Indiana State Board of Health, Water and Sewage Department. Three of the 13 Indiana municipalities have 2 outlets each; and consequently each outlet is included in the tabulation separately, especially since part of the Gary sewage is treated and part untreated. See Table XIX.

Grand and Little Calumet rivers, which flow westward through Indiana parallel to Lake Michigan. After these rivers crossed the Indiana line they joined to form the

TABLE XIX

	Raw	Treated	Total
Des Plaines River	6	12	18
Fox River	3	10	13
Lake Michigan	5	7	12
Calumet River	6	6	12
Salt Creek (Ill.)	2	7	9
Du Page River	2	6	8
Chicago River	0	5	5
Little Calumet River	4	0	4
Thorn Creek	0	4	4
Grand Calumet River	3	0	3
Kankakee River	1	2	3
Drainage Canal	0	3	3
Deep River	2	0	2
Illinois-Michigan Canal	2	0	2
Calumet-Sag Channel	1	0	1
Stony Creek	1	0	1
Flag Creek	1	0	1
Deep Lake	1	0	1
Jackson Creek	1	0	1
Calumet Union Drainage Ditch	1	0	1
Mauvaisterre Creek	1	0	1
Illinois River	1	0	1
Indiana Harbor Ship Canal	1	0	1
Cedar Creek	1	0	1
Coffee Creek	1	0	1
Salt Creek (Ind.)	1	0	1
Travis Ditch	1	0	1
Weller Creek	0	1	1
Flynn Creek	0	1	1
Sexquoit Creek	0	1	1
Black Walnut Creek	0	1	1
Skokie Ditch	0	1	1
Third Lake	0	1	1
Bangs Lake	0	1	1
Swamp	0	1	1
Total	45	74	119

Calumet, which flowed northeastward to enter Lake Michigan just north of the Illinois-Indiana state line. But now the upper part of the Little Calumet drains

directly into Lake Michigan via Burns Ditch; the next segment has been tapped by the Sag Channel, and drains into the Mississippi basin by that route; while the remainder, to the confluence with the Grand Calumet, has been reversed in current and flows into the Sag Channel also. The upper section of the Grand Calumet also flows directly into Lake Michigan, through the Indiana Harbor Ship Canal; and the remainder flows down to the former confluence with the Little Calumet, whence it flows sometimes "up" the segment of the Little Calumet with current reversed and so into the Sag Channel, and sometimes into the old Calumet into Lake Michigan. Thus the Calumet itself flows half the time into Lake Michigan and half the time out of Lake Michigan and into the Sag Channel via a portion of the old Little Calumet, depending on conditions of flood and wind.[1]

As a result, sanitary sewage from 112,500 persons in Indiana and 2,500 in Illinois enters Lake Michigan through Burns Ditch, the Indiana Harbor Ship Canal, and the Grand Calumet; and 2,400,000 gallons of waste containing organic matter and 8,100,000 gallons containing objectionable taste-producing compounds enter Lake Michigan daily. Of these industrial wastes, only 10 per cent comes from Illinois. Industrial plants in Illinois are eliminating the wastes voluntarily, but Indiana's disposal of sanitary sewage in the lake is far from solution. The latter problem constantly increases

[1] Chicago Department of Health, *Triennial Report*, p. 449. For a thorough discussion see H. R. Crohurst and M. V. Veldee, "Report of an Investigation of the Pollution of Lake Michigan in the Vicinity of South Chicago and the Calumet and Indiana Harbors," *Public Health Bull. 170* (April, 1927). The Public Health Service made the study in co-operation with the Sanitary District of Chicago, the Chicago City Department of Health, the Indiana State Board of Health, and the Illinois State Department of Public Health.

with the population, and Chicago's water supply is more and more heavily contaminated.

Chicago itself discharges its sewage into the Drainage Canal, which is the south branch of the Chicago River with current reversed and turned into the Mississippi basin via the Illinois River. Thus a single channel carries away the sewage of over 3,000,000 people, while the remaining 1,500,000 pollute well over 30 other streams or lakes. Moreover, we have not included in the tabular statement the numerous miniatures sewer systems set up by subdividers outside the corporate limits of any municipality. The usual procedure in such cases is simply to turn the effluent into a nearby creek.

Sewage-disposal methods of each municipality in the Region may have profound effects upon public health in every other. The problem is regional in scope; it demands unity in control. Let us see whether the agencies involved have developed a co-operative attitude upon their own initiative.

II. STATE, SANITARY-DISTRICT, AND MUNICIPAL ACTIVITIES IN SEWAGE DISPOSAL

Each of the four state health departments maintains some agency to advise and supervise local authorities and investigate local conditions. But while the regional situation constitutes one of the worst problems in sanitation in the entire country, these state agencies spend much less than a proportionate amount of time in the Region.[1] To illustrate, of seventeen investigations made

[1] Illinois Department of Public Health, *Eighth Annual Report*, p. 89; *Illinois Health News*, XIII, 118; *Indiana Yearbook* (1926), pp. 594 ff.; Michigan Department of Public Health, *Fifty-third and Fifty-fourth Annual Reports*, pp. 58 ff.; Wisconsin State Board of Health, *Thirty-first Report*, pp. 99 ff.

by the Indiana Water and Sewage Department during the last reported year not one occurred within the Region; and the Illinois Division of Sanitary Engineering does considerably less than half its work there.

As to co-operation between these state agencies, or concerted action by them, the final provisions of the 1927 Indiana statute quoted below reveals the real relations between Indiana and Illinois regarding pollution of Lake Michigan. It reads:

> Be it enacted by the General Assembly of the State of Indiana, that it shall be unlawful for any person, firm, or corporation to throw, run, drain, or otherwise deposit into any of the waters of the state, or to cause, permit, or suffer to be thrown, run, drained or otherwise deposited into any such water or waters, any dyestuff, acid, coal tar, oil, logwood, or any other by-products or derivative of any such, or any other poisonous substance, which of itself is deleterious to the public health or to the prosecution of any kind of industry, lawful occupation or calling for which, or in which any such water or waters are or may be lawfully used or employed, or whereby the carrying on of any agricultural, floricultural or horticultural pursuit may, or shall be, adversely affected, or whereby any live stock industry or the use of any such water or waters by or for domestic animals may be lessened or impaired, or whereby any lawful use of any such water or waters by the State of Indiana or by any political subdivision thereof may be lessened or impaired or materially interfered with, or whereby any beneficial animal or vegetable life in said water or waters may be destroyed or jeopardized: *Provided, however, that none of the provisions of this act shall apply to Lake Michigan or to any of the rivers, streams, or any of the artificial channels or drains which empty into Lake Michigan along the shore line of Indiana or Illinois.*[1]

By specifically exempting the Calumet district and other areas along the lake front, the Indiana legislature has apparently served notice that it does not intend to compel cities like Gary, Hammond, East Chicago,

[1] *Acts of Indiana* (1927), chap. xlv, p. 126. The italics are ours.

Whiting, Michigan City, to treat their sewage or cease discharging it into the lake. This is in direct response to repeated pleas from Chicago authorities that some action be taken to check the rapidly growing menace to regional health. Clearly, Indianapolis has scant sympathy with the interests of Chicago, or, for that matter, with the true interests of regional Indiana. We have remarked in a previous chapter the prevalence of very high typhoid-fever rates in regional Indiana—a situation which follows directly upon contamination of the water supply.

Similarly, friction developed between Indiana and Michigan over pollution of rivers flowing from Indiana through Michigan and has continued for years, although Indiana officials have co-operated in clearing up this situation and the statute just quoted forbids further pollution in such cases.[1] While Kenosha is now planning construction of a sewage-treatment plant, formerly it has dumped raw sewage directly into Lake Michigan just as the Indiana cities do. Actually, co-operation between the states has been notable for its absence. Instead, friction and hostility have flourished. The federal agencies have done nothing to produce a unified plan of action, except in so far as its investigations of water supplies have an incidental bearing.

The main function of the cities, towns, and villages of the Region, as the situation now stands, is to provide local sewers which connect with trunk systems established by the sanitary districts. Of course, in the absence of sanitary districts—that is, especially in Indiana cities and Kenosha—the local unit must provide the

[1] Michigan Department of Public Health, *Fifty-fourth Annual Report*, p. 67.

entire system of sewage disposal. Failure to do this properly while at the same time adequately protecting interests of other regional areas has led to the serious confusion which now menaces the Region's health.

The minor sewer systems vary widely in effective service to the various regional centers of population. The Chicago system served from 95 to 98 per cent of the population in 1925, with large additions since that date; the city spends millions in maintenance of pumping stations and in the building, cleaning, repairing, and inspecting of sewers; and privies are forbidden where sewer connections are possible and where impossible regular sanitary inspections are made, with frequent orders issued for cleaning.

Cicero, Evanston, and Oak Park were said to be completely sewered in 1925, but 12 per cent of Aurora's population (including some groups outside the city's legal boundaries) were still without sewer facilities in 1927. Less than 60 per cent of Joliet's buildings were sewered in 1925, but the health officer seemed unperturbed when questioned on the point. He said, "Show me a city where there are no pit privies." Elgin has "quite a few privies in the outskirts." Hammond is fairly well sewered, but Gary has 3,000 pit privies which are supposed to be kept clean under scavenger contract.[1]

In general, the smaller the municipality the greater the privy nuisance. Many smaller villages and hamlets have no system whatever, but the worst conditions are found outside the limits of incorporated municipalities.

[1] The information contained in this and the preceding paragraph was obtained from the *Illinois Appraisal of 15 Cities;* the *United States Public Health Service Bull. 164;* the Chicago Health Department's 1925 *Report;* the 1929 *Chicago Budget;* the Federal Census Bureau's *Financial Statistics of the Cities;* and through personal investigation and questioning.

Each spring new thousands of city dwellers seek the open country and build houses—or shacks or shanties—in the "rural districts." There are no building regulations there, no sanitary code, and usually no sewer facilities. The builder may construct a pit privy, or a septic tank, or even an open drain emptying into the nearest watercourse; supervision and inspection are absent. A casual drive through Du Page County, or regional Indiana, will reveal numerous instances where subdividers operating along the fringes of the municipalities have simply created miniature sewer systems for their private purposes and turned the effluent into a nearby creek.

The state legislatures in Springfield and Indianapolis seem uninterested in this problem, which is fundamentally a regional one. It arises from the dispersion of regional population permitted by the automobile and suburban electric trains. It is very vital to the Region, but uninteresting to the rural populations which compose, in the main, non-regional Indiana and Illinois. Solution of the problem would seem nearer if the Region, as a unit, might plan its own future and protect itself against the ignorant and selfish within its borders.

Inability of the individual municipalities to cope with the problems of sewage disposal was early recognized, and each of the four states permits organization of closely related areas into sanitary districts. There are now (1929) 11 such within the Region, all in Illinois. They are of several varieties in legal basis and also in practical importance. By far the foremost of these is the Sanitary District of Chicago. Created by legislative fiat in 1889, this District has been repeatedly enlarged until it is now more than double Chicago in area, containing all of 44

suburban municipalities, parts of 15 others, and much "rural" area, in addition to all but .06 of Chicago's 210.51 square miles.[1] Though still wholly within Cook County, the District promises soon to expand into Du Page and Lake counties.

The District's first task was the creation of the Drainage Canal, already described, with the result that Chicago's death-rate from typhoid fever and other filth-borne diseases dropped sharply. Lake pollution was checked, only to develop again with the growth of "fringe" cities not only outside the Sanitary District of Chicago, but also outside the state of Illinois. The District is now creating a vast system of treatment plants and extending its trunk sewer system throughout the area, and while more than a suspicion of graft and corruption has tainted its activities the value of its achievements cannot be questioned.[2]

Whether equivalent results might not have been obtained with a much smaller expenditure under careful administration is another matter.[3] The huge increases in property values caused by the District's activities cannot, of course, condone misuse of funds. One theory

[1] The area of the District was 442.35 square miles, as of May, 1928.

[2] During 1928 and 1929 the Sanitary District of Chicago was involved in one of the worst series of scandals in the history of local government in America. The grossest misuse of funds was definitely proved. For publications prior to the great scandal, but pointing to its inevitability, see *A Synopsis of the Report on Investigation of the Sanitary District of Chicago*, by the Chicago Association of Commerce; and Wooddy, *The Chicago Primary Election of 1926*.

[3] From organization in 1889 to December 31, 1925, the District received $118,533,230.39 from tax collections; bonds outstanding on January 2, 1926, were $38,096,000; and appropriations for 1926, 1927, and 1928 were $42,253,953, $34,180,824, and $58,393,083.17, respectively. Clearly total expenditures must approach $300,000,000.

assigns the obscurity which enshrouds the operations of the District as the cause for peculation. The trustees are elected at the biennial November election, when state and national issues transcend purely local matters, no matter how important; and the searchlight of public scrutiny is rarely thrown upon the District's problems.

Of the 10 remaining districts, the largest is the North Shore, which includes, roughly, that part of Lake County, Illinois, which drains into Lake Michigan. It contains 6 municipalities and parts of 2 others, and meets the Sanitary District of Chicago at the Cook-Lake County line. Similarly, the much smaller Indian Boundary and Hinsdale districts adjoin the Sanitary District of Chicago on the south and west, respectively. The Indian Boundary Sanitary District contains that part of Markham not already included in the large district, parts of 3 other villages, and about 10 square miles of "rural" area; and the Hinsdale District contains those portions of Hinsdale and Western Springs not within the Chicago District, and all of Clarendon Hills. In turn, adjoining the Indian Boundary District on the south and the Hinsdale District on the west are the Lincoln Highway and the Downer's Grove districts, which include Matteson and parts of 2 other villages, and all of the village of Westmont and part of Downer's Grove, respectively. Moreover, still to the west and north of the Downer's Grove District lies the newly created Salt Creek Drainage Basin Sanitary District, containing Addison village and most of Villa Park and Elmhurst, and enough "rural" area that its total area exceeds thirty square miles.

In addition, there are the districts of Wheaton, Aurora, and Elgin which include the cities of the same

names and some small adjoining unincorporated areas as well. About the only advantage they enjoy over the municipalities themselves, then, in the control of the sewage-disposal problem, is the special tax rate they may impose. As in the case of the Sanitary District of Chicago the additional governmental machinery makes popular supervision and control more difficult, and administration more complex. Finally, there is the newly created Bloom Township Sanitary District, in the far southern portion of Cook County.

It is very hard to justify the creation of these numerous small districts. The function performed by the central district, of unifying the sewage-disposal problem for a much larger area than that included within the Chicago city limits, does not apply here. The boundary lines are either practically identical with those of some pre-existent local government, or they are largely arbitrary in their inclusion of unincorporated and corporated area. An insight into some reasons which may have led to formation of the Indian Boundary and Lincoln Highway sanitary districts to the south of the main district may be obtained from the fact that the Sanitary District of Chicago is planning to run a trunk outfall sewer outside its own boundaries and through the heart of these two districts, providing an outlet for the areas to the new Calumet-Sag Channel. Thus the smaller districts accomplish their aim at the expense of the taxpayers of the larger district to the north; and it seems entirely probable that they were created in the first place as a defense against inclusion within the larger district, so as to avoid the higher taxation which would result. It is worthy of note that these small sanitary districts include areas which are rapidly growing in population and value

due to the electrification of the Illinois Central, which passes through them; and that several very wealthy and influential persons have real estate investments there.

The advantage to be obtained by the main sanitary district for its operations is not clear. The explanation advanced by the officials of the Chicago District is as follows:

> The problem of sewage disposal [for this southern area] is a serious one. . . . . In an effort to solve the problem, two sanitary districts have been formed. . . . . The engineers representing these two districts have studied the problem and feel that . . . . an outlet to the Calumet-Sag Channel is the most desirable plan.
>
> Inasmuch as the law permits contracts between Sanitary Districts for the construction and operation of works, and further, inasmuch as the territory included may some day desire annexation to the Sanitary District, it is thought that a working agreement is worth while, and that the Sanitary District should bear its share of the cost.[1]

And still some skeptics doubt the existence of a Santa Claus!

No such close "co-operation" is observable between the Chicago District and those adjacent to it on the west. It is probable that there also, however, one reason for establishment of separate districts was fear of absorption into their overshadowing neighbor. As for the outlying districts, the special tax rate and bonding power is about the only real reason for creation. Ineffectiveness of the arrangement was recognized by the Illinois legislature when it established the River Conservancy Act, permitting creation of river conservancy districts, which were designed to include a much larger

[1] Sanitary District of Chicago, *Chief Engineer's Report and Recommendations* (1928), p. 54.

area and which were granted much larger powers than the old-type sanitary district. Several efforts have been made to create a huge conservancy district along the Fox River, but litigation or adverse popular majorities have consistently prevented.

This concludes the list of sanitary districts now in operation, although more are projected. Indiana statute now permits creation of such districts with power to enter into agreements with similar districts in other states (meaning the Chicago District), which would permit paying for part of the values for the Calumet-Sag Channel. However, a recent referendum on creation of such a district out of North Township, which would include Hammond, East Chicago, and three or four smaller Indiana municipalities, was defeated. Evidently the Indiana cities wish future favors of the Chicago District, as those of the past, to be free of charge. The Chicago District, through construction of the channel, has already made possible the disposal of sewage from these cities, and from Gary, Hobart, and at least four others already.

Clearly, there is plenty of opportunity and plenty of necessity for co-operation, but to date not much co-operation. Most moves made in this direction have been at the instigation of the Sanitary District of Chicago. Thus it is an engineer of the Sanitary District who says:

> As the problem of sewage and industrial waste disposal in the Calumet Region of Illinois and Indiana has a common public health interest to the Indiana State Department of Health, the Indiana cities and industries, as well as the Chicago Sanitary District, it is evident that there should be very close co-operation by all parties concerned. To this end, ... the following recommendations are submitted:
>
> 1. That the Sanitary District of Chicago co-operate with and

assist, insofar as is desirable the State Department of Health of Indiana in formulating as early as possible, a practical program for the disposal of phenol containing wastes from the by-product plants of the Youngstown Sheet and Tube Company, and the Inland Steel Company of Indiana Harbor, and the United States Steel Company at Gary. . . . .

2. That the State Department of Health of Indiana and the Chicago Sanitary District jointly study the drainage and sanitary problems of the Calumet Region both in Indiana and Illinois, with the object in view of formulating a general co-operative policy for the best use and control of the Calumet River and its tributaries so as to prevent pollution to Lake Michigan, giving consideration also to the practicability of effective diversion via the Sag Channel.[1]

The Sanitary District of Chicago is the nerve center of the program. It built the Drainage Canal and the Calumet-Sag Channel. It conducts a constant study and analysis of conditions, possibilities, and difficulties. But the Sanitary District and the state of Illinois are legally helpless in dealing with the Indiana cities. All the Sanitary District can do under present conditions is seek the co-operation of the Indiana State Health Department, and we have already seen that the latter is little interested in regional affairs.

The importance of this problem, and the need for co-operation among the present units of government, is successfully shown by the fact that 60 municipalities and portions of 23 others are found within the 11 sanitary districts of the Region, with several new districts projected. Moreover, there are over 20 municipalities within two miles or less of these existing districts, and which may obtain some advantage from them, to say nothing of the dozen Indiana cities which are even now

[1] *Proceedings of the Board of Trustees of the Sanitary District of Chicago* (January 26, 1928), p. 216 (report by A. E. Gorman, engineer in the Health Department of the District).

potentially served by the Chicago Sanitary District facilities.

The disadvantages of the system may be stated briefly. First, the districts are not extensive enough. Three include only a single city, and only the Chicago, the North Shore, and the Salt Creek Drainage Basin districts cover any great amount of area. Moreover, the Chicago District is increasingly hemmed in by bordering districts, and at all events is kept from expansion in the most natural and necessary direction—along the shore of Lake Michigan to the southeast—by the Indiana state line.

Second, the present arrangement is inequitable in that parts of some cities and villages are included, while parts remain outside. Since the municipality constructs the minor sewers, and uses the sanitary-district system only for trunk outlets, the entire municipality obtains the advantages for which only the property lying within the district is taxed.

Third, co-operation between the various districts is slight. The only notable instance is that cited, and the motives in that case appear to have been either entirely altruistic or else somewhat shady—and in either case unrepresentative of the interests of the people the trustees were and are supposed to represent. Six or seven of the districts lie in a solid block of territory, which is somewhat absurd in the light of the fact that they are all supposed to be solving the same identical problem. Even as far as drainage areas are concerned, at least three of the smaller districts would be much more reasonably united to the Chicago District than separated from it.

Finally, because these districts are not coterminous with or subject to any other unit of local government, and since they must elect their own officers and conduct

their own affairs, they merely complicate further a system of local government already too complex. Their activities are less in the public eye than those of city, village, or county, so there is a stronger temptation to inefficient, wasteful, and even dishonest use of funds.

Apparently the entire problem requires consideration from some point of view where the Region is a unit. And apparently, from past experience, this is impossible, at least until the establishment of some unit of government consisting of the Region of Chicago—no more, no less.

III. SOURCES OF WATER SUPPLY

Surely the importance of a safe water supply for each of the Region's 4,500,000 inhabitants needs no demonstration, yet from the foregoing discussion it is manifest that no large untainted sources are available. Of the regional municipalities 39, containing 80 per cent of the total population, draw their supplies from Lake Michigan, through 12 separate systems. While there are no water districts similar to the sanitary districts, the advantages of coaction are so clear that several groups of municipalities have banded together voluntarily in this enterprise. Thus 18 other units draw their supplies directly from Chicago's mains, reimbursing that city for expenses incurred.[1] Harvey is one of these 18, but it in turn sells water from its mains to the villages of Markham and Phoenix; and Berwyn also acts as middleman in this capacity to North Riverside. So, including Chicago itself, 22 municipalities draw water from the Chicago mains. Moreover, three other groups of cities and villages co-operate in this way: Evanston supplying

[1] The 18 include Cicero, Oak Park, Berwyn, Blue Island, Harvey, Calumet City, Park Ridge, Niles, Niles Center, Dolton, Elmwood Park, Riverside, River Grove, Riverdale, Burnham, Burr Oak, Evergreen Park, and Tessville.

Wilmette, which in turn supplies Grosse Pointe; Winnetka providing for Kenilworth and Glencoe; and Highland Park supplying Deerfield and Highwood. Gary, East Chicago, Hammond, Whiting, Michigan City, Kenosha, Waukegan, and Lake Forest have separate systems.

All these supplies are from a contaminated source, and their safety depends upon two things—treatment and placing intakes far from shore—each of which will be discussed shortly. At this point it might be well to refer once more to the degree of pollution to which Lake Michigan is subject. The recent Public Health Service Survey concludes:

> From the mere recital of the above facts it might be inferred with certainty that the waters of Lake Michigan would be grossly polluted in the immediate vicinity of the Calumet shore line, and that the pollution would extend some distance into the lake.
>
> The results of these examinations show that an area of constant gross pollution extends nearly a mile into the lake from the mouth of the Calumet River to the vicinity of the Indiana Harbor Ship Canal. Under favorable conditions of wind this zone of gross pollution is extended, reaching at times east to the Gary Light and north beyond the line of the Sixty-Eighth Street and Dunne Cribs. Bacteriological evidence of occasional slight sewage pollution was found as far out as 10 miles east of Jackson Park, Chicago, approximately 9 miles northeast of the entrance of the Indiana Harbor Ship Canal. Water of bacteriological quality conforming to the United States Treasury Department standard for drinking water on interstate carriers was found consistently only at a distance of about four miles east of the Dunne and Sixty-Eighth Street Cribs, and nearly $7\frac{1}{2}$ miles northeast of the Indiana Harbor Ship Canal. The intensity of pollution in the lake at any given point except the outer margin of the area studied was found to vary enormously from month to month and even from day to day, due apparently to changes in the direction and velocity of winds.[1]

[1] *Public Health Bull. 170,* pp. 131–32.

And in addition to these Indiana sources of pollution, we must remember that Kenosha dumps raw sewage into the lake, and that Waukegan's treatment of its sewage is of doubtful value.

There are about 100 other systems in Illinois and 15 in Indiana, most of them drawing supplies from wells of some sort. Many of these supplies are tainted at the source, and some are definitely unsafe as they reach the consumer. Of the Indiana supplies 2 are listed as questionable or unsatisfactory; and 15 of those in Illinois come under the heading "Doubt" as to sanitary quality.[1] These cases include Joliet with its 40,000 inhabitants; Hobart, Indiana, which draws its supply from Deep River; and such communities as Lockport, Crystal Lake, Winthrop Harbor, Batavia, Naperville, Downer's Grove, Park Ridge, Des Plaines, and Franklin Park.

IV. MUNICIPAL ACTIVITIES IN CONTROL OF WATER SUPPLY

We have just noted above that the two factors in municipal control are (1) obtaining as pure a supply as possible, and (2) treatment as needed. In the matter of treatment, all supplies drawn from Lake Michigan are chlorinated, and many of the inland supplies as well. In addition, Evanston and Winnetka filter, while East Chicago and Whiting go farther and use the process of sedimentation. Kenosha combines coagulation, sedimentation, filtration, and final sterilization. That the protection afforded by these measures is, however, inadequate will be shown later in this chapter.

The main protection for cities using lake water is in locating the intakes as far from shore as feasible. Chi-

[1] Facts obtained by courtesy of the Illinois Division of Sanitary Engineering and the Indiana Department of Water and Sewage, respectively.

cago far excels her suburbs here, one intake being four miles from shore. This requires tunneling through the bed rock under the lake—an expensive process which most of the satellites cannot afford. Distance of intake from shore for eight of the twelve systems is listed in Table XX, together with the *B. coli* index for the water as it enters the intakes and after treatment.[1]

TABLE XX

	Distance Offshore	*B coli.* Index	
		Raw Water	Treated Water
Chicago, average	4,782.4 yd.	18	.028
Four-mile crib	6,870	.....	.....
Wilson crib	5,301	.....	.....
Harrison crib	4,687	.....	.....
68th St. crib	3,527	.....	.....
Dunne crib	3,527	.....	.....
Gary, Ind	2,640	55	2.6
Hammond, Ind	1,700	9,911	4.7
Evanston, Ill	1,330	57	.03
East Chicago, Ind	800	8,507	.5
Lake Forest, Ill	393	2,647	.9
Whiting, Ind., average	300	8,876	1.1
One, at	400		
One, at	200		
Waukegan, Ill	200	3,400	10.9

Once more, Chicago is seen to protect its citizens far better than the satellites protect theirs. Safety of the Hammond and Evanston supplies is questioned by their state departments; and only Evanston and Chicago of the eight systems listed above passed the revised Treasury Department *B. coli* standard for safe drinking

[1] *Public Health Bull. 170*, pp. 27, 124, 127. The *B. coli* index is the number of colon bacilli per 100 cc. of water. While presence of these inhabitants of the human intestinal system does not conclusively show coexistence of typhoid-fever organisms, it indicates a strong possibility. A high index represents a real menace.

water for all twelve months of the year studied. The Public Health Service study quoted points out that either the pollution in both Calumet and North Shore areas must soon be abated, or additional extensive treatment facilities must be provided if the supplies of these cities are to be kept (or made) safe. And once more let us note that existing governmental machinery has proved wanting in initiative and resources essential to this task.

As for water supplies other than public, Chicago inspects the wells and cisterns of the 2 or 3 per cent of its population not connected with the city mains annually. Elsewhere, however, such wells and cisterns are rarely examined except upon specific request, or in search of the focus of infection of a local epidemic. In analysis of the supply as it leaves the pumping stations and as it reaches the consumer Chicago is again pre-eminent. During the year 1925 the Water Analysis Division of the Bureau of Laboratories made over 24,000 analyses of samples collected at pumping stations and throughout the city at large; whereas cities like Aurora, Joliet, and Elgin do not pretend to analyze their supplies more often than weekly; and cities like Maywood, La Porte, and Batavia analyze only every six months. As will be shown shortly, the smaller communities have little supervision if any, and grave danger is usually present. One other activity which Chicago stresses is supervision of dumping and dredging operations along the lake front to avoid pollution, with eleven inspectors employed at this work.[1]

[1] Chicago Department of Health, *op. cit.*, p. 274; also City of Chicago, *Proceedings of the City Council* (January, 1928), pp. 1773–74.

V. ACTIVITIES OF LARGER UNITS

It must not be thought that the quality of a city's water supply is of interest only to its citizens. In the first place, where so very much intercommunication exists consumption of the supply is not confined to local inhabitants; and, second, diseases like typhoid fever which may originally gain a foothold through the water supply frequently spread through other channels. Obviously, the dangers are especially great in a metropolitan area. The situation is well put in the following statement: "The quality of the public water supply is really of more than local concern. A person infected in one city who lives elsewhere may be the source of infection of others hundreds of miles from the city which maintains the unsafe water supply."[1]

Under such conditions, first the federal government and then the states have taken steps to maintain some degree of centralized control, particularly over the smaller municipalities which are sometimes criminally negligent. The federal authorities have used the interstate commerce power as an entering wedge, and Interstate Sanitary District No. 3 (headquarters in Chicago) makes sure that interstate carriers like ships and trains provide proper water supplies for passengers and crews. This function seems insignificant, but its possible ramifications are hinted in the following quotation: "As interstate carriers generally use municipal water supplies, the supervision of the water used by them often indirectly results in improvement in the character of the water used by the municipalities."[2]

Probably the federal government could, through its

[1] Illinois Department of Public Health, *Ninth Annual Report*, p. 40.

[2] Tobey, *National Government and Public Health*, p. 126.

authority over navigable waters and its general power to protect the health of one state against acts of another, stop pollution of Lake Michigan. In extenuation of its failure to do so, the chief engineer of the Interstate Sanitary District argues that pollution by Indiana cities is not yet so heavy but that Chicago can still protect itself by simple chlorination of the water supply.

The Interstate Sanitary District does investigate; it gives advice; it stimulates local authorities generally. Rather than assume real responsibility, however, the federal agency has encouraged the separate states to establish similar bodies with larger statutory powers, assisting such bodies at first and later withdrawing aid as they became self-sufficient. Thus the federal government prevents interstate spread of disease through encouraging strict state supervision over local governments. Besides the Interstate Sanitary District, the Bureau of Chemistry of the Department of Agriculture controls shipments of bottled waters, and the Water Resources Branch of the Geological Survey (Department of the Interior) provides information fundamental to the improvement and development of municipal water supplies throughout the country.[1]

All four states have agencies interested in supervision of local water supplies. The Illinois Division of Sanitary Engineering (Department of Health), in the last eighteen months reported, made 400 field investigations, held 150 conferences, and examined 25 plans for improved water supplies; the Division has sought to improve sources of water supplies available to travelers along state highways, 90 per cent of which were found to be

[1] See Leigh, *Federal Health Administration*, pp. 334–35, and Tobey, *op. cit.*, pp. 126, 193, 283.

unsafe; and it examines supplies of common carriers. Those supplies which are satisfactory are "certified." Two important objections may be made to the Division's work, from a regional viewpoint: (1) a very large proportion of its effort was put forth downstate; and (2) its statutory authority is insufficient, as evidenced by the following statement: "All four water-borne epidemics that occurred in the State during the calendar year 1925 . . . . could have been prevented if the warnings of the Division of Sanitary Engineering had been followed or if the department had had authority to order that changes or improvements to the supplies be made."[1]

This lack of centralized authority is much less important in a farming region, where local affairs are less closely related to neighboring communities, but it is of intense importance in a densely inhabited area cut up into numerous autonomous political units. It is simply another case where the rural-minded legislature fails to comprehend the problems of the metropolitan area.

The only other Illinois agency interested is the State Water Survey, in the Department of Education and Registration, and connected with the State Board of Resources and Conservation. It is primarily an advisory and research agency, providing information concerning water supplies throughout the state.[2]

The Indiana Water and Sewage Department (State Board of Health) during the last reported year made 39 water surveys, although only 1 was within the Region.

[1] Illinois Department of Public Health, *Ninth Annual Report*, p. 40.

[2] *Illinois Blue-Book* (1927–28), pp. 507–13; see also *Illinois Health News*, XIII, 117, and Illinois Department of Public Health, *Ninth Annual Report*, pp. 35–41.

This failure to concentrate on the Region was the more remarkable in the light of the situation we have outlined. The Wisconsin Bureau of Sanitary Engineering made 241 local investigations during the last two years reported, among them 1 at Kenosha. Michigan's administrative organization is similar to that of Illinois in this regard, but its regional influence is slight.[1]

In addition to these state agencies, the Cook County Department of Health maintains a Division of Sanitary Engineering, in itself an indication that neither the state of Illinois nor the local governments have solved this problem. To avoid duplication the Cook County sanitary engineer has sought to assume all responsibilities which the state organization could ordinarily carry in that area. Three facts concerning his activities illustrate the confusion which exists in water-supply control in Cook County: (1) the hostile attitude of the country-school authorities prevented the sanitary engineer's completion of his examination of rural-school water supplies; (2) despite the proximity of the Chicago and the Cook County Hospital laboratories to his office, the engineer sends his samples to the State Laboratory at Springfield; and (3) to eliminate a cross-connection between the Hammond, Indiana, public water supply and a raw river supply on the Illinois side, which was traced as the cause of several typhoid-fever cases, the engineer had to obtain the co-operation of the Indiana State Board of Health at Indianapolis.[2] Even the Cook

[1] *Indiana Yearbook* (1926), pp. 587–600; Wisconsin Board of Health, *op. cit.*, pp. 100–102; and Michigan Department of Health, *Fifty-third Report*, pp. 23–73.

[2] Cook County Department of Health, *Annual Report of the Sanitary Engineer* (December 1, 1927 [typed]), p. 2.

County public health nurses have occupied themselves in suggesting changes in public water supplies.

VI. CONCLUSIONS

Conclusions concerning sewage disposal throughout the Region have been stated in part at an earlier point in this chapter, and various conclusions concerning water supply have been at least inferred from time to time; yet it seems profitable to review them now, with special attention to possibilities of creating governmental machinery better adapted to the situation. As for the water supply, two points stand out:

First, no present unit of government in the Region is adapted to the supervision of local water supplies. The federal authorities are diffident and seek to stimulate the states to action rather than shoulder the burden themselves. State activities center in the respective state capitals; no one state is responsible for conditions in the entire Region; and the dangers involved in the regional situation are so much greater than for the state as a whole that the entire problem does not receive the attention it deserves. The Cook County sanitary engineer deals only with that portion of the county outside the city of Chicago, and does not have a staff sufficient to do this work well even in that area. Clearly, the Region itself is the most desirable unit for such supervision.

In the second place, it is entirely feasible to extend the Chicago water system to serve literally scores of units clustered about the city, in addition to the twenty or more now connected. Such an extension would be a great improvement in sanitation for the area concerned, as the Cook County sanitary engineer states. Of course,

there are many communities too distant to be so served conveniently, but it would be much better if numbers of them (and especially those bordering the lake) would unite so as to furnish funds sufficient to safeguard the common supplies. This work might be profitably done under a system of regional control and planning. Certain it is, as a glance at the typhoid-fever statistics recorded in a previous chapter will show, that under present conditions the Chicago death-rate from diseases which are usually water borne is much, much lower than that for the Indiana cities especially, and for the Region as a whole.

As in water supply, so in sewage disposal the absence of the necessary degree of co-operation between the parts of the Region has permitted development of pestilential nuisances which destroy natural advantages for recreation purposes and menace the public health. The makeshift contrivances of the state legislatures have not solved the problem. Only in Illinois has the permissive legislation been adopted. Where sanitary districts have been established gross inequities and scandalous waste are present. The Sanitary District of Chicago, which has done great positive good, has not expanded and cannot expand as rapidly as the problem it was meant to solve. The way in which the problem has outgrown the District is shown in the Calumet district, for when the Sanitary District was established in 1889 Hammond had 699 inhabitants and Whiting 115, while Gary and East Chicago were not yet born, although today these cities contain 200,000 people. As for the other sanitary districts, established or proposed, the failure of such piecemeal methods is recognized in the constant efforts toward larger units.

Moreover, reliance upon fickle popular interest and approval has not helped. The Chicago Sanitary District, by far the best of the lot as far as results go, had to be created by legislative fiat. The very technical problem of sewage disposal affects the Region as a single unit, and it cannot be solved by the isolated pronouncements of separate and ill-defined electorates throughout the Region. For the rest, many observations made in former chapters appear again herein: e.g., state activity is largely due to federal instigation; the states neglect the Region, relatively speaking; Chicago provides most of the energy and initiative toward solution of regional problems; and a regional inspection service would be feasible and helpful. And finally, no really effective solution of the interwoven problems of water and sewage in this area appears possible until the Region is considered as a unit, and adequate governmental machinery is established on that basis.[1]

[1] The problem of sewage disposal in the Chicago area promises to be complicated still further by a reduction in the amount of water diversion permitted to the Sanitary District of Chicago by the federal government. If this contemplated reduction is enforced the Sanitary District will have to expand its sewage-treatment system at a rapid rate, or a still more serious health problem will be created. The decision of the United States Supreme Court in the suit *Wisconsin and Other States* v. *Illinois and the Sanitary District* (278 U.S. 367; October term, 1928) clearly foreshadows such reduction, although the case was again referred to the master, Charles Evans Hughes, for further examination. For a discussion of this whole problem see Gardner S. Williams, "The Sanitary District of Chicago in the Supreme Court of the United States," *Michigan Law Review*, XXVIII (November, 1929), 1–25.

CHAPTER XII

MISCELLANEOUS PHASES OF SANITATION AND PUBLIC HEALTH

Before the development of the germ theory of disease —i.e., fifty or sixty years ago—the general cleanliness of a city was regarded as the most important item in a municipal health campaign. Now, however, the relative importance of sanitation has declined with the rise of other means of control, such as quarantine, serums, vaccines, and, more recently still, impressive hygiene programs. Nevertheless, from a health as well as a comfort standpoint, general sanitation is not unimportant.

I. GARBAGE AND REFUSE DISPOSAL

Garbage and refuse disposal, aside from sewage, is the most difficult sanitary problem the city confronts. In many regional communities there is no public collection, and householders frequently deposit it where it becomes a breeding place for flies and a general public nuisance. Other municipalities collect it, only to make objectionable disposal of it. An example is the huge dumping ground west of Chicago, between Summit and Lyons, which burns constantly. The resultant stench, under proper wind conditions, causes acute discomfort at a distance of half a mile, and thick smoke drifting across the state highway constitutes a traffic menace. In some Indiana localities garbage fed to hogs causes a disagreeable nuisance.

The Health Department itself is rarely connected with this function, since the public works or street-

cleaning organization is primarily responsible. The larger cities are as a rule superior to the smaller jurisdictions, both in collection and disposal methods, although the costs are higher. Chicago maintains a municipal garbage reduction plant at an annual operating cost of about $350,000; while of the other cities visited 9 incinerate, 8 dump or fill low land, and 3 feed hogs. Several communities complained that methods of disposal used by neighboring communities cause annoyance to their citizens. Chicago's collection system is superior to the average of even the larger suburban areas, where the local health departments are always receiving complaints.[1]

From the point of view of the smaller municipalities the advantages possible through consolidation of effort are apparent, both in collection machinery and adequate disposal plants. Efficiency and better service would be possible, especially for the ninety-five municipalities clustered in a solid block around Chicago. The wastefulness in each unit maintaining its own system is apparent, aside from the carelessness in regard to the interests of neighbors in disposal. If the expense of hauling to one central regional reduction plant were too great, a number of supplementary plants might be established in strategic locations to serve groups of several communities now striving to solve their problem individually. The municipality under five thousand population is too small to cope with the problem effectively and efficiently by itself.

[1] See *Report* of the Whiting health officer to the Mayor and Council (January 10, 1927). Even cities like Des Plaines and North Chicago have no collection service. Per capita costs are as follows: Chicago, $1.574; Gary, $0.190; Cicero, $0.970; Oak Park, $1.483; Kenosha, $0.891; Hammond, $0.653; East Chicago, $0.900; Evanston, $0.476; Joliet, $0.141; Aurora, $0.407; Elgin, $0.313 (*Financial Statistics of Cities* [1925]).

II. COMMUNITY OF MISCELLANEOUS SANITATION

The scope of this work in Chicago is explained in the following statement: "The community sanitation division investigates and enforces the abatement of nuisances, such as cutting of weeds; defective plumbing; flooded basements; improper privy vaults and manure boxes; nuisance from odors and breeding places for flies, rats or other carriers of disease."[1]

Chicago has an army of inspectors constantly engaged answering complaints, investigating, and enforcing abatement orders; sometimes special canvasses or campaigns are undertaken, but the work is mainly routine inspection. Elsewhere in the Region administration of such work varies: sometimes a special inspector is employed; sometimes the quarantine officer does the work; sometimes the food inspector adds it to his functions; sometimes the health officer himself accepts the burden; in other places the township supervisors who are also health officers accept the responsibility or refer the occasional case which arises to the County Board; but most frequently in actual practice there is no one to whom complaint may be made with any assurance that action will be taken.

In this connection it is interesting to observe that the Chicago Department of Health inspects the summer camps (many of them far from the city) where thousands of Chicago children spend brief vacations. In 1927 the Department actively supervised camps attended by 80,000 children.[2] This service is rendered by the Chicago Department without legal jurisdiction over the places in question; and it seems entirely reasonable that were the

[1] *Chicago's Health*, XXII (April 17, 1928), 95. [2] *Ibid.*

Chicago inspection service extended throughout the Region in full legal authority the work could be done much more effectively than at present. But for this to be possible it would be necessary that the Region be made the governmental unit for health administration.

III. HOUSING

The influence of this factor upon tuberculosis death-rates, to say nothing of effects upon happiness and general health, makes it extremely important. Restrictions throughout the Region generally are not exacting, although some of the larger cities do make some motions in this direction. While housing conditions in some sections of Chicago are bad from nearly every point of view, the Health Department has two divisions employed in this type of work.

The plumbing division checks building plans to see that windows are sufficient in number and of proper size; that yards and courts permit ample light and ventilation, and that the plumbing and drainage are effective and lawful.

The heating and ventilation division inspects all natural and mechanical means of heating and ventilation in buildings used for industrial or public purposes, as well as in public transportation vehicles, to insure maintenance of a proper temperature and air supply.[1]

Of course, the scope of this work is extremely limited in comparison with the broad field of sanitary inspection of houses and apartments to determine which buildings should be condemned and destroyed, but at least it is a step in the direction of stricter control. Aside from approval of building plans, little or no attention is paid to housing conditions in the suburban municipalities, and exceedingly evil slums may be found in many

[1] *Ibid.*, pp. 94–95.

of them, as in Chicago. Buildings constructed outside municipalities are under no legal restrictions whatever. Many cities have no zoning ordinances, and those which have been adopted vary, although the Chicago Regional Planning Association has secured a degree of uniformity in that respect. If all cities and villages had the best conceivable codes in force, industrial concerns could still locate plants in the "open country," while retaining the advantages of the labor supply and distribution facilities of the metropolitan community. Establishment and enforcement of housing rules applicable to the entire Region seem desirable.

IV. ATMOSPHERE POLLUTION

By excluding the ultra-violet rays of the sun, and through the effects upon human lungs, a smoke haze over a city is a health menace. The Chicago Health Department did maintain a Smoke Abatement Division which carried on a campaign for the enforcement of municipal ordinances, but this agency has now been transferred to the Division of Boiler Inspection. While it was charged that the change was politically inspired, to the end that the positions involved might be made a part of the spoils system, the Smoke Abatement Division still maintains a definite control program and possesses personnel to enforce it.

Even this degree of control is not exercised anywhere else in the Region, although the most obnoxious smoke of the area emanates from the Indiana industrial plants and, under certain wind conditions, the thick haze always hanging over the Indiana Calumet district is blown across the line into Chicago. In East Chicago the Department of Public Works has an appropriation for

smoke abatement work, but no results are apparent. The smaller Illinois municipalities maintain not even a semblance of control, and in those larger suburbs with some pretense of control activities are feeble and ill directed. Apart from legal obstacles Chicago's administrative machinery might be extended to cover the entire Region with only the employment of a few more inspectors; whereupon industry in all parts of the Region would operate under equal restrictions, and no part of the Region could impose the disagreeable results of its laxity upon helpless neighbors.

V. MOSQUITO ABATEMENT

This is primarily a problem of comfort rather than of health, since malaria is not frequently found in the Region. However, since it is urged by sanitarians that certain skin diseases are transmitted by mosquitoes, and in view of certain unusual administrative aspects, a brief discussion is here included.

Prior to the creation of the mosquito abatement districts, above referred to, the situation was about as follows: Chicago and a few of the neighboring municipalities made occasional abortive campaigns, but uncoordinated effort by them was unproductive. It could hardly be otherwise, for breeding places in neighboring areas remained; and even if every municipality in the Region took rigorous action, the swampy grounds in "rural" areas would remain. The Chicago Sanitary District has tried to prevent its channels for sewage disposal from becoming mosquito breeding places, and has extended its activities to some additional territory as well; but while it is one of the few jurisdictions embracing a large-enough area to act effectively, its efforts

have been quixotic and uncertain. The same criticism applies to the other sanitary districts, and in addition they are not large enough to cope with this problem. One engineer of the Illinois Department of Health is constantly employed in mosquito abatement and has done some work in the Region, but the State Department has neither funds nor authority to do exhaustive work. Anyway, the state is not a natural control unit, for it is neither a natural unit of population nor a natural drainage area. The county is a more natural unit, but the entire legal set-up of county government does not contemplate control of this sort. The townships are completely inactive here, as in most phases of health work.

No established unit of government which seemed territorially adapted to undertake the task possessed statutory authority or responsibility for it, and various private organizations like the Glencoe Mosquito Abatement Association recognized this fact and sought and obtained legislation permitting creation of mosquito abatement districts—entirely separate units of government able to impose special tax levies. The lines of such districts may cut across the boundaries of municipalities, sanitary districts, townships, etc., and are determined by the petition of the organizers and ratified by popular vote. Alteration of existing units to conform with the need seems not to have occurred to the legislature, so instead of improving the old machinery a new set of complicating *ad hoc* agencies was established.

VI. POPULAR HEALTH EDUCATION

Results from this branch of health work are intangible and hard to measure, but sanitarians are agreed that it is of fundamental importance. In theory hun-

dreds of governments in the Region of Chicago are responsible for increasing popular knowledge of health facts, and some are performing very valuable services in this field. Nevertheless, a survey of their activities reveals opportunity for improvement.

Many of the forty federal agencies interested in health work publish material of an educational nature. They act as "a clearing house for the exchange and distribution of information useful to state and local health officers,"[1] and in addition publish millions of pamphlets for public distribution. Their work has been especially helpful in the fields of maternity and infant hygiene, school hygiene, and venereal disease, but has extended to almost every phase of public health. In fact, there are 1,700 government publications in this field, and distribution ranges from 5,000,000 to 18,000,000 copies per year—all in addition to current information released by the departments to the press from time to time.[2] Despite the duplication of effort among separate agencies the contribution of the federal government in this field is worthy of high praise.

Each state health department has a subdivision engaged in popular health education. These agencies receive hundreds of thousands of federal pamphlets annually for distribution in the state. They also prepare current press releases and pamphlets of their own, send out representatives who lecture and show educational films in local communities, and conduct special campaigns—usually in co-operation with local school systems. The Illinois Division of Public Health Instruction distributed 362,000 pieces of literature, showed films be-

[1] Leigh, *Federal Health Administration*, p. 380.

[2] Tobey, *The National Government and Public Health*, pp. 369–71.

fore an attendance of 298,000, and released 178 articles of press matter from which 6,948 clippings were returned, in the last reported year.[1] The Indiana Department of Visual Instruction held 24 local "Health Weeks," with an attendance of 36,000 at health talks and film showings; but not one of them was held in the Region.[2]

Each state health department publishes an annual report, and the Illinois Department puts out a monthly periodical, the *Illinois Health News*, which is adapted to the needs of health workers rather than the general public. The Wisconsin State Board of Health also publishes a *Quarterly Bulletin*, primarily scientific and technical in nature, with a circulation of 9,000.

These state activities fade into insignificance beside the Chicago program. In that city the parents of each newborn baby receive, on the first day of each month of the baby's life up to one year, a pamphlet specially prepared by the Health Department giving general instructions concerning the infant's care for that month. As some 60,000 babies are born in Chicago each year the total number of such pamphlets sent out must be 600,000 or 700,000.[3]

The Chicago Health Department also publishes 18,000 copies of a weekly bulletin, *Chicago's Health*. Formerly somewhat technical and statistical in its treatment, it was changed in the interest of readability under Dr. Bundesen's direction. This bulletin provides interesting news matter for the press, and in addition a short news story is issued to the newspapers weekly. The

[1] Illinois Department of Public Health, *Ninth Annual Report*, pp. 14–15.

[2] *Indiana Yearbook* (1926), p. 567.

[3] As of 1927. Some changes have been made in this program by Dr. Kegel.

bulletins are translated into several foreign languages and submitted to the foreign-language press of the city, where they frequently obtain much prominence.

The Chicago Health Department conducts a School of Sanitary Instruction each year for employees and others, offering extensive courses in almost every public health field. In a sixteen-year period over 60,000 persons have been enrolled.[1]

The syndicated newspaper health column is said to be one of the best means of popular health education, but most city health departments have no official connection with this work. This is technically true in Chicago, but Dr. Bundesen conducted such a column in the *Chicago Daily News* even while health commissioner, and Dr. W. A. Evans, who edits the column in the *Chicago Tribune*, is a former health commissioner. These columns are of value wherever they go, and since the newspaper circulation is primarily regional in scope they are a natural means of disseminating health information of interest to the Region as a unit.

Since the summary removal of Dr. Bundesen as city health commissioner by Mayor Thompson, and his subsequent appointment as director of health of the Sanitary District of Chicago, some friction has resulted between City and Sanitary District concerning his actions. The Health Department in the Sanitary District was created after Dr. Bundesen was dismissed from the City Hall, and was abolished after his later election as Cook County coroner, and seems to have been made especially to permit him to exercise his talent for public education. Although such work is en-

[1] *Chicago's Health*, XXII, 123; also, for Chicago's popular-health-education program see the departmental *Triennial Report*, pp. 55–56.

tirely foreign to the statutory purposes of the Sanitary District, which are primarily concerned with sewage disposal, a new periodical, *Everybody's Health*, appeared under his direction at that time. As far as might be judged from its first issues it will largely duplicate the function of *Chicago's Health* under Dr. Bundesen's administration as health commissioner.

Shortly after Dr. Bundesen's appointment as health director of the Sanitary District flaming posters began to appear on "L" platforms and in street-car advertising, describing the new step taken by the Sanitary District in the interest of community health. Other posters, hotly resented by the City Health Department, pointed out the sharp decline in typhoid-fever death-rates in Chicago and inferred full credit to the Sanitary District. While the publicity activities of both City and Sanitary District are of unquestioned value in making the populace "health-minded" or "public health-minded," the overlapping and discord must be deplored.

Moreover, the City of Chicago Municipal Tuberculosis Sanitarium publishes a monthly or bimonthly *Bulletin*, occasional numbers of which contain general reports of work accomplished. No complete synopsis had been published for any year since 1924, however, as of September, 1929. The articles usually deal with technical details of tuberculosis treatment, or are general and popular in nature, and rarely have more than an incidental connection with actual work of the Sanitarium, as far as statistical measurement of results is concerned.

The only other regular reports in the Region are those put out by the Cook County and Evanston departments of health, and that of the Kenosha Department

contained in the annual city report. The last-named department also publishes popular bulletins on health work and problems from time to time. In other cities, towns, and villages about the only popular-health-education activity is an occasional release of news items containing vital statistics or dealing with some special problem, and these are quite infrequent.

We have noted in a previous chapter that the schools have not by any means fully exploited the possibilities of health education there. The greatest variation exists, depending upon personal attitudes of teachers, county superintendents of schools, and school nurses. Lack of direction is a principal cause for the low standards prevailing in many outlying communities in this field.

Before leaving this subject it should be pointed out that the metropolitan newspaper is the ideal vehicle for dissemination of regional health information. A recent study of newspaper circulation in the Region revealed that all daily newspapers published in Cook County had a combined circulation of more than 90 papers for every 100 persons in that area, that even at a distance of forty miles from the Loop these same papers had a circulation of 35 per 100 population, but that at a distance of eighty miles the circulation ratio had dropped to less than 12 per 100.[1] In other words, Cook County dailies circulate freely throughout the entire metropolitan area, but fail to penetrate extensively beyond. Now, while persons outside of Chicago are not much interested in health facts concerning that city, and while Chicago people are little interested in health news concerning the suburban

[1] These data were obtained from the preliminary report of a study by Professor Park and Mr. Newcomb of the Sociology Department of the University of Chicago. This study is now in process of elaboration.

areas, everyone would be interested to some extent in health statistics on a regional basis. Under present conditions these are not available, as explained in a previous chapter.

Similarly, as to lecture tours, film showings, maintenance of mailing lists, the Region is a natural unit of administration. Methods of approach and materials to be used could be fairly uniform throughout the Region, while different techniques and content apply to rural areas. A staff centered in Chicago and suburbs could perform this work in the Region with much less inconvenience than one resident in Springfield or Indianapolis.

VII. CONCLUSIONS

In the sanitation functions discussed the Chicago organization is uniformly superior to those of other areas. The grand scale upon which the Chicago Department is organized permits it to take account of these minor matters, whereas a department which consists of one man, part time, does well to cover a very few of the most fundamental lines of control. Overhead costs are prohibitive for cities and villages of 5,000, and even of 50,000 people, but are insignificant when spread over 3,000,000 people. They would be still less burdensome for a group of 4,500,000 or 5,000,000 organized as a unit of health administration.

The fact that circulation of Chicago newspapers conforms in extent rather closely with the limits of the Chicago Region is of utmost significance. Groups which read the same news items have much in common already; and the forces which confine metropolitan newspaper circulation to the limits of the Region further illustrate its economic unity. These forces are primarily

two—speed of transportation and the limits of the usual retail trading area.

There is no administrative reason why smoke abatement, housing control, community sanitation, and above all popular health education might not be placed under regional direction, through a simple extension of governmental machinery now operating in Chicago. Such an extension seems more reasonable than the present control methods enforced by about 350 local agencies and from 4 state capitals. The obstacles which bar the way are certainly not administrative.

CHAPTER XIII

A RECAPITULATION OF CONCLUSIONS

I. GOVERNMENTAL EFFORTS TO PROMOTE PUBLIC HEALTH BRING RESULTS

No one seriously questions this statement, although it is difficult to establish the exact relationship between activities of governmental agents and reductions in rates of death and disease. This is well illustrated in the words of a noted sanitarian quoted in a previous chapter, showing how the factors of food supply, refrigeration, pasteurization of milk, improved control of common contagion, and a generally higher standard of life and intelligence make it impossible to determine the precise effect of public anti-tuberculosis measures in checking the ravages of that disease.[1] The very statement includes, however, several factors which are due to public health efforts aside from direct control of tuberculosis. This study has revealed so many cases in the Region of Chicago where good or bad health standards are concurrent with high and low disease rates, respectively, that a close connection is proved beyond reasonable doubt.

Since this point is so fundamental to any suggested change in the regional machinery of public health control, a few illustrations will be called to mind. One of the most striking things brought out in the study is the fact that death-rates from common contagious diseases are higher in suburban cities and "rural" areas than in Chicago, and markedly so. This may be properly associated

[1] *Supra*, chap. v.

with the highly efficient methods of contagion control developed in the central city. Moreover, in respect to contagious diseases and in many other health activities those regional cities included in the 1925 *Health Appraisal of 15 Illinois Cities* rated almost the same in standards of control work as in contagious-disease death-rates and other comparative criteria of actual health protection afforded.

To eliminate the factor of different areas, we may take tuberculosis rates for Chicago alone. The death-rate dropped sharply as long as case location and case supervision were on the increase, but began to rise immediately when cases reported and cases under supervision fell off after 1922. The same situation may be observed in the case of infant hygiene. While the death-rate among all Chicago infants under one year was from 70 to 90 per 1,000, and among infants from one to two years 15 to 20 per 1,000, the death-rate among babies registered in the infant clinics (and these include only those under two years of age) was from 6 to 9 per 1,000. Elsewhere, also, where good methods of control and preventive activity prevail the infant mortality rates are falling at a more rapid rate than in areas where such forethought and effort are absent. Numerous other cases might be cited, and even these three will be further reviewed below.

II. CHICAGO'S HEALTH PROTECTION IS SUPERIOR TO THAT AFFORDED BY OTHER LOCAL GOVERNMENTS IN THE REGION

This assertion is based upon first-hand study of the organization and methods of local health departments throughout the Region, and upon a fairly exhaustive

statistical analysis of case reports and death-rates both as to comparison of Chicago with other areas and as to trends in Chicago and elsewhere. It requires only two major qualifications: first, that in the case of tuberculosis a comparison of present trends is unfavorable to Chicago; and, second, that while only two or three other units equal or even approach the average level of Chicago's health program, a few suburban units may equal or surpass the central city in any one of several isolated phases of health administration. Since this conclusion is by far the most important revealed by the study, Chicago is herewith compared to the other regional units item by item, in brief review.

In the collection of vital statistics Chicago is practically alone among the 330 local health departments in putting pressure upon physicians, midwives, and others to report births and deaths, and is absolutely alone in maintenance of a Hearing Board before which violators may be haled for explanation. In keeping records only Chicago uses the photostatic process of copying, thus eliminating all errors and saving large sums—Chicago being the only jurisdiction large enough to justify the investment. Chicago allocates births and deaths to wards of residence, and so rectifies one type of error which causes great confusion elsewhere. And with one or two exceptions Chicago is the only municipality where any reasonable or careful interpretation is made of the statistics gathered; in most places the figures are merely recorded in compliance with the law and are not used in guiding the local health program or in evaluating its results. Chicago's staff of 20 trained persons devoting full attention to this problem can and does do better work at a lower unit cost than the 214 part-time em-

ployees covering half as many people spread out over the remainder of the regional area.

In the matter of contagious disease only Chicago, Evanston, and Winnetka keep complete and graphic records of case residence and time of onset, although half-a-dozen other cities keep some spot maps; Chicago's record of vaccinations against smallpox and of immunizations against diphtheria and scarlet fever is far and away superior to that of the average jurisdiction, and in each case is excelled by only a few of the larger suburbs, with every one of the smaller units inferior; Chicago has a trained force of quarantine officers which contrasts with the township supervisors in the rural areas, for example; Chicago is one of the half-dozen cities which have abandoned the ancient methods of gaseous terminal disinfection for the more common contagious diseases and substituted thorough cleansing and strict laboratory tests when necessary; Chicago is practically alone in its effort to locate and isolate carriers of typhoid fever, diphtheria, etc.; in Chicago all cases of smallpox, poliomyelitis, and epidemic meningitis, together with 75 per cent of all typhoid, 30 per cent of diphtheria, and 25 per cent of scarlet-fever cases, are hospitalized in the two city hospitals maintained for the purpose, whereas in the remainder of the Region outside of Oak Park and Evanston hospitalization is much less satisfactory; and only Chicago, Cicero, Kenosha, Gary, and a few smaller cities follow a routine practice of nursing visits to cases of contagion. Moreover, this theoretical superiority is borne out most strikingly in comparing death-rates in Chicago with those in other cities of the Region of more than 10,000 population, and with the "rural" dwellers. Taking the seven diseases most commonly recognized as

controllable in part at least by the health departments—typhoid fever, smallpox, diphtheria, scarlet fever, measles, whooping cough, and infantile paralysis—the Chicago death-rate was lower than that for the other cities in every case but scarlet fever (where it was 4 per cent higher), and lower than that for "rural" areas in all but measles and whooping cough (where it was 15 and 2 per cent higher, respectively). Moreover, the Chicago rate was lower than that for the entire remainder of the Region in every single case; and for all seven diseases combined the rates of the other cities and the "rural" areas were 38 and 5 per cent higher than Chicago's, respectively. The combined rate for Chicago was lower than that for 8 of the 10 other cities of over 30,000, and lower than that for 6 of 9 cities from 10,000 to 30,000. The difference is not due to unusual conditions for a single year, for the figures represent averages over a period of four years. The figures cannot be criticized on the grounds that the units are too small, because the "other cities" and the "rural areas" each contain well over 500,000 people. Several of the seven diseases strike most heavily at children, but in 1920 Chicago's population was 14.2 per cent aged under seven years as compared with 14.9 per cent in the Region outside, a difference of but 5 per cent. Neither do sex groupings nor other age groupings show any marked differences between the composition of population in Chicago and in the regional remainder. None of these factors can explain the variance in rates revealed by the study. On the other hand, the Chicago Health Department has to deal with a negro population proportionally 170 per cent and a foreign population proportionally 37 per cent larger than in the remainder of the Region; while the

"rural" areas and the outer suburbs are naturally favored with a large share of fresh air and sunshine, and with a much smaller degree of slum congestion, less frequent personal contacts, less smoke, noise, and filth. All these factors simply reinforce the strength of the contrast between death-rates for Chicago and those for surrounding areas.

Tuberculosis control constitutes the only exception to the otherwise-uniform superiority of Chicago over surrounding areas, and this function has been entirely removed from the hands of the Health Department and transplanted in an independent agency—the City of Chicago Municipal Tuberculosis Sanitarium. During the first few years of this agency's existence the city's death-rate from tuberculosis was reduced very sharply indeed, and in 1922 stood at a level far below that of the surrounding regional area, since which date the death-rate has shown a slow but consistent rise. Although the Chicago rate is still somewhat lower than that for the remainder of the Region, the trends are in opposite directions: rates for the remainder of the Region falling constantly while the Chicago rate rises.[1] As for beds available for tubercular patients, if we include Cook County as a unit, it compares favorably with the regional remainder, containing 9 beds for each 10 annual deaths in contrast with 4 beds per 10 deaths elsewhere.

In measures of venereal-disease control Chicago makes a remarkable comparison with the remainder of the Region. Case reports for each 100,000 population rose from 450.6 in 1921–22 to 815.5 in 1925–26, in comparison with an increase from 124.8 to 155.7 in other

[1] A further summary of this situation appears at a later point in this chapter.

cities of regional Illinois, and a decrease from 78.8 to 69.0 for "rural" regional Illinois. Reports for regional areas of Indiana and Wisconsin are not readily available, but for the entire states the rates were 110.0 for 1925–26 and 111.9 for 1925, respectively. Only in Chicago is there compulsory examination of all Morals Courts cases for venereal disease. Only Chicago maintains quarters—Lawndale Hospital—where diseased prostitutes may be isolated for treatment, and where they may learn other ways of earning a living. Chicago laboratory facilities are superior to those of other cities, especially from the point of view of unit costs. And as for the clinics at work in the Region, 12 of 17 are in Chicago, and these 12 make 98.9 per cent of all tests, receive 97.3 per cent of all new patients, and give 95.4 per cent of all treatments. Nor may it be assumed for one moment that the overwhelming preponderance of anti-venereal-disease work in Chicago is due to the comparative absence of the disease in other regional areas.[1]

In child hygiene Chicago is again pre-eminent. Although about half this work is done by the Infant Welfare Society, a privately supported agency, more than half of the babies born in Chicago each year are registered in a clinic; and the share done by the Health Department is greater than the efforts of any other regional public agency, even in proportion to population, with one or two possible exceptions among the 330 other units. Only 4 other regional cities have any clinics supported by the Health Department. The effect is clearly indicated in the decline in Chicago's infant mortality rate—a decline much larger than that for other regional

[1] See comparison between rejections of urban and rural recruits by the U.S. Army (1917–18) for this cause.

cities, or for the "rural" areas. Although efforts in the field of prenatal hygiene are much less extensive, they are more advanced than in any other jurisdiction except Evanston, and the stillbirth rate in Chicago has dropped while rates for other parts of the Region have risen. Similarly, larger efforts have been put forward in the field of preschool hygiene than in other cities. Although a few cities, like Gary, stress this point even more strongly, Chicago's record of a physical examination for an average of 150,000 children yearly is far above that of all but a very few jurisdictions. The thoroughness of the examinations is indicated by the discovery of more than two defects per examination; and the follow-up system has obtained a notable number of corrections. Of 10 small cities visited only 1 had a medical examination for school children as a customary procedure. The Chicago nursing system is a matter of contrast with other municipalities as well.

Chicago's far-flung inspection system which protects its milk supply at the source is, of course, incomparable; and the stringent rules concerning the tuberculin test for cows in herds supplying its markets have been imitated in only a few other municipalities even yet. While most of the larger suburbs have food inspectors, none of them condemns anything like the 3,000,000 pounds per year which is declared unfit for food by Chicago inspectors; and the large size of the Chicago organization permits specialization which is highly desirable.

In matters of miscellaneous sanitation, such as housing, smoke abatement, nuisance abatement, and the like, the Chicago organization seems superior although the material on this point is not sufficient to be conclusive

of anything but that the smaller jurisdictions are practically inactive. Chicago is head and shoulders above any other regional government in the matter of popular health publicity, with the aid of its splendid statistical bureau, its technical publications, and the regular pamphlets sent to parents of infants quite unparalleled in the entire remainder of the Region.

Chicago's water supply was also shown to be much superior to those of most other communities of the Region, except those which draw their water direct from Chicago mains. The *B. coli* index, danger signal for typhoid fever, dysentery, and other filth diseases, is lower for Chicago water than for that of any other municipality drawing its supply from Lake Michigan; and many of the inland supplies are declared definitely unsafe by state authorities. One clear reason for the greater purity of Chicago water is the enormous financial resources which permit that city to tunnel farther out under the lake to establish intakes.

In the light of this evidence, and much more similar data included in the body of the study but too copious to be even summarized at this point, Chicago methods of health control appear to be superior in practically every respect, and where results are measurable they support this conclusion in every detail.

III. CHICAGO PROVIDES HEALTH PROTECTION TO THE SUBURBS, WHICH ESCAPE THEIR JUST SHARE OF THE COST

Loyal suburbanites may resent the statement that their municipalities act in many respects as parasites upon the central city. Probably most of them are unaware of the situation which exists, both in respect to

activities of tax-supported bodies and of agencies supported by contributions of Chicagoans. A notable example is the way in which from 150,000 to 200,000 people in the Region receive protection from Chicago's careful inspection of dairy farms absolutely without cost by drawing their milk from the same sources as Chicago.

Another illustration is found in the comparison of case reports for venereal diseases in Chicago Heights, Cicero, Oak Park, and Evanston with those for Chicago. While the Chicago rate stands at 800–900 per 100,000, the rates for these four suburbs, at least two of which contain large working-class populations, were respectively 13.1, 11.0, 13.3, and 82.6 in 1925–26. Obviously the persons in these suburbs are so close to the central city that they make free use of its clinics; they are reported as Chicago cases, with the result of swelling them and reducing the number reported from the smaller but more virtuous (*sic!*) suburbs. Of course the cost of most of the Chicago clinics is borne by the public or by Chicago contributions of a charitable nature.

Most of the costs of the Sanitary District of Chicago are borne by the city of Chicago, yet that agency by diverting the flow of sewage from Lake Michigan has performed a service of greatest value to neighboring cities —notably to Indiana cities, which show their gratitude by turning their own sewage into the lake and polluting Chicago's water supply—and has even provided outlets for the sewage from these Indiana cities via the Calumet-Sag Channel, yet the neighboring cities bear no share of the costs.

To cite just one more illustration, the Chicago Tuberculosis Institute receives most of its financial support through the sale of Christmas seals and through other

contributions in Chicago. Yet since the establishment of the City of Chicago Municipal Tuberculosis Sanitarium, the larger part of those funds are spent in anti-tuberculosis work in the suburban areas in Cook County. Thus the Institute maintains 18 health centers in Cook County outside Chicago and has 26 nurses at work, in addition to a diagnostician and other technical helpers. And all this is in addition to the levies of county taxes upon Chicago, most of which are expended in the county outside the city, and the levies of state taxes by Indiana and Illinois which are spent preponderantly outside the area where collected. And despite this double drain from which Chicago obtains services for only that part collected for itself, the central city is shown to be far in advance of the regional remainder in protection of the public health.

In spite of this Chicago aid in such material matters, the smaller jurisdictions with one or two exceptions have not developed any health program worthy of the name. Even when they have adopted some forward-looking measure it is usually imitative of the larger city; the "spongers" seem to lack initiative and foresight in planning their own health campaigns.

IV. THE WORK OF THE FEDERAL GOVERNMENT HAS BEEN OF GREAT VALUE

In the field of vital statistics the federal government has been a most stimulating influence. Its efforts have led to a uniform list of the causes of death throughout the country; through its birth- and death-registration areas it has stimulated more complete and accurate reporting, and through its comprehensive interpretation and analysis of these reports it has been able to direct

local health activities into the most profitable channels. The federal government guards the country against some of the most dreaded contagious diseases through quarantine measures enforced at seaports and on boundary lines; through its research many disease problems have been solved, and the results of the research communicated to local officials through demonstrations of control measures in the local community; and in the special supervision of vaccines, serums, anti-toxins, it has performed another real service. Most of the impetus of the regional anti-venereal disease work came from the federal government, which provided grants-in-aid to such states as would establish their own bureaus and divisions of social hygiene; and while it no longer aids the states financially it keeps records of the operations of the agencies created by the states, and of supplementary municipal efforts. In all phases of child hygiene work the federal government is active in publishing information on which local programs may be based; and in some cases federal pamphlets gain a circulation of some millions per annum. Through its subsidies to the states in the eradication of bovine tuberculosis the federal government has greatly stimulated that work and improved the milk supplies of the Region very materially. Finally, the federal statute governing foods and meats shipped in interstate commerce has stood as a model which has been widely imitated by the states in their control of local commerce in them; and the rather strict enforcement by the federal government of its legislation has also stood as a model which has not at all times been fully followed. The vast resources of the federal government permit it to devote millions of dollars to research in various projects without the total

budget being disturbed more than slightly, whereas the states and local governments are unable to appropriate for such general purposes so nonchalantly. While the effects of its work might have been still greater had the forty different agencies been co-ordinated under central direction, the contribution of the federal government to the Region's health is outranked only by that of Chicago itself.

V. THE PRESENCE OF FOUR STATES COMPLICATES REGIONAL HEALTH CONTROL AND SOMETIMES HINDERS IT SEVERELY

Four separate sets of vital-statistics law are in force within the Region; there are four degrees of law enforcement on any one subject; and there are four sets of morbidity and mortality reports, making it extremely difficult to compare conditions as between various parts of the area. Different rules are in force governing contagion, and the municipalities on either side of the Indiana-Illinois line charge that they are menaced by the laxity in the other state. The state departments exercise various degrees of general supervision over control of contagion, with power to take charge of a local area in time of emergency, but direct action is not usual. Three of the four states maintain state tuberculosis sanitariums or hospitals, but the ratio of beds allotted to the Region is small. The states have been fairly active in venereal-disease work under federal stimulation, and distribute large qualities of drugs for treatment (just as they do serums and vaccines and anti-toxins in communicable-disease control); but while their laboratories are open for service to the Region they are generally too far removed to be of much service; and while state officers may isolate such cases with much less pressure

than local officials they are, again, too far distant from the scene to operate effectively.

The state is the agency which provides for the licensing of all professional people, including midwives, and control in this respect should be fairly stringent, but only in Michigan was this found to be true. In other phases of child hygiene work variation was also found both as to popular health education through pamphlet distribution and other means, as to development of clinics for babies and instruction groups for prospective mothers, and as to medical examinations of school and preschool children. Usually the state agents specialize in demonstrations which aim to encourage establishment of local facilities on a permanent basis, and in that way they are merely passing on the stimulus given them through the federal government. State inspectors sometimes deal with matters like school sanitation and food control, but the state budget is not usually large enough to permit anything like systematic execution of a thorough program.

Sometimes the state legislatures are actively hostile to health measures thought essential to self-preservation by the cities. In 1911 the Illinois legislature passed an act forbidding any local community to require the tuberculin test for cattle in dairy herds supplying its market; and it was only after a long controversy and several legal skirmishes that Chicago was able to nullify the force of this restriction and protect its milk supply, after which some neighboring suburbs quickly followed the example. Another striking illustration of discrimination by a rural-minded legislature against urban interests is the special exemption of the Lake Michigan basin in Illinois and Indiana from the provisions of the state act respecting pollution elsewhere throughout Indiana.

Concentration of state activities upon rural health problems is much more common than active hostility; but this, too, is a serious problem because it means taxation of urban districts to protect "downstate" rural interests, and leaves regional areas to tax themselves once more to provide for their own defense. This is most noticeable in Indiana, where practically every chapter afforded notable instances of failure by the state authorities to devote proportionate attention to regional problems, although those problems are much more pressing than they are in rural portions of the state. Similarly, the Illinois State Department seems to feel that Chicago's excellent city health organization can fend for itself without assistance, and the efforts state agents put forth in the Region are almost entirely confined to the other regional cities and to "rural" areas.

Even in the rural districts the ineffectiveness of the state control measures is indicated by the statement of the director of public health in Illinois, that the State Department frequently did not know the names of the local health officers, because they changed with local elections. The Region is an integral unit economically, socially, and from the point of view of public health, but is divided by state lines into four sections under wholly unco-ordinated control. The confusion resulting from four sets of statutes and four sets of administrative rules on every conceivable health subject is mitigated only by the unifying influence of the federal government.

VI. INEFFICIENCY IS INHERENT IN THE PRESENT CHAOS

First of all, no intelligent or comprehensive public health program will come from a system which divides responsibility among some 300 part-time health officers,

with only a scattering few full-time professional public health men. When these men are laymen, like the Illinois township supervisors, they are ignorant of control measures against common contagious diseases, to say nothing of the broader phases of a preventive campaign. When they are private physicians, as in most of the smaller cities and villages, they are largely absorbed in their own practice, naturally, and are so fearful of the bogey of state medicine that much of their possible usefulness is destroyed. People who are more concerned with the dangers of paternalism in venereal disease and tuberculosis clinics, and with the fact that women with silk stockings avail themselves of the advice of the infant welfare clinic, than with the declining infant mortality rates and the current death-rates of the common communicable diseases do not fit into a modern health program.

These part-time officers and piecemeal districts result in a failure to establish a standard health program throughout the Region. Even when the men are conscientious and anxious to carry out their duties to the full, their work lacks balance and direction. They do not realize the things that are fundamental, and frequently concentrate attention upon minor or incidental phases of health administration—like the two health officers who devoted most of their attention to the cutting of weeds to prevent hay fever, and in preventive work against smallpox (a disease which is practically insignificant in current death-rates), respectively. Even among the major suburbs the most remarkable variation exists as between different health functions in the same city—note the extremely good record of Gary in school health work, the fine record of school nursing super-

vision in Cicero, and the frequent overdevelopment of food inspection throughout the Region as examples. Among the smaller districts not much hope for lowered death- and morbidity-rates is to be found in a health department whose only annual expense was incurred in the removal of a dead horse, or in one which boasts that it has incurred no expenditures whatever ("this made our record 100 per cent").

Throughout the smaller jurisdictions reports of contagious cases are poor, hospitalization is infrequent, and methods of quarantine and terminal disinfection are antiquated. Under this small-district system there is no such thing as venereal-disease control or conscious anti-tuberculosis measures. Cities like La Porte and Michigan City report no tuberculous persons under supervision, and in discussing venereal disease the local health officer stated that "there are few, if any, cases in Cicero." This simply means that control measures are absent. And the same situation prevails with respect to almost every other phase of public health work with the possible exception of common contagion, and even there the results of what effort is applied compare unfavorably with Chicago. The small size of these jurisdictions effectively prevents their maintenance of any balanced or progressive health-protection program. And the division of some municipalities, like Aurora and Evanston, into two or more school districts with separate health functions complicates matters still further.

Creation of *ad hoc* districts with special health functions has not improved conditions to the extent expected. While the Sanitary District of Chicago has resulted in a much better water supply for large areas, and

improved health conditions, the scandalous corruption and waste attending its activities are a byword throughout the entire United States. The other ten districts are too small to serve the purpose of co-ordination; they are arranged so as to place inequitable burdens upon regional taxpayers; there is no co-operation between them worthy of the name; and they are governed by a body directly elected by a voting public already overburdened and confused by too many civic duties, with the results that these districts operate in a twilight of public interest many shades darker than that in which the municipalities or even the townships operate.

As for the City of Chicago Municipal Tuberculosis Sanitarium, this study has revealed several rather arresting facts. The number of tuberculosis cases under supervision in Chicago in 1918 was 24,620, and this increase to 35,494 in 1922 at the same time the tuberculosis death-rate was dropping from 145.9 to 78.3. The number of cases under supervision has never been so high since that time, and the tuberculosis death-rate has never been so low. While adult cases under supervision were falling from 14,476 in 1922 to 9,975 in 1927, the death-rate rose from 78.3 to 82.7, and in 1928 rose farther to 85.0. Further facts of interest here are that cases reported (a good index of sanitarium activity) have declined from 10,519 in 1922 to 7,085 in 1928, while total deaths rose from 2,220 to 2,684 in the same period, the ratio of cases reported per death falling from 4.74 to 2.64. At the same time expenditure budgets for operation and maintenance (mainly salaries) of the Sanitarium rose without a break from $1,466,960 in 1922 to $2,380,000 in 1928.

Nor can this situation be explained away by pointing

to the influx of negroes and Mexicans. This influx is occurring in every large city of the country, yet Chicago is the only 1 of the 10 largest cities of the United States which shows a higher tuberculosis death-rate for 1927 than for 1922. The other 9 cities report reductions of 3.4 to 30.8 points, in contrast with the Chicago increase of 4.4, which was raised still farther to 6.7 for 1928. Moreover, while it might be used to explain part of the increase in death-rates, it certainly cannot explain the persistent decline in cases reported, and the persistent decline in cases under supervision by the Sanitarium, and the persistent decline in the ratio of cases reported per death, which is now well below minimum standards set by sanitarians. The increase of the Chicago death-rate contrasts with a decline for the remainder of Illinois of 15.7 points, of 12.5 points for Indiana, of 9.5 points for Wisconsin, and of .8 point for Michigan. And while the ratio of case-reporting was declining for Chicago, it rose for the remainder of regional Illinois from .49 in 1920–21 to 2.86 for 1925–26; in regional Wisconsin it rose from .22 in 1920 to 2.00 in 1926; in regional Michigan it rose from 1.50 in 1921 to 3.33 in 1926; while in regional Indiana it also rose from 1.25 in 1925 to 2.31 in 1926.

It is quite true that much of the improved anti-tuberculosis practice outside of Chicago comes from the activities of the Lake County (Ind.) and the Kane and Will and Kenosha County sanitariums, but conditions are improving in regional Michigan where the old health-department machinery is acting unaided. Moreover, it must be recalled that in the early years of its operation the Chicago Sanitarium showed the most remarkable results, only to slide backward with the de-

crease in popular interest and attention. The Sanitarium now spends about as much as the Health Department each year, but has no such striking achievements to which to point. In theory there is co-operation between the Sanitarium and the Health Department, but the summary dismissal of the nurses and doctors formerly employed by the Sanitarium in co-operation with the Health Department in its school health program, leaving that work disrupted and unprovided for without any reasonable notice, illustrates the dangers involved in such "voluntary co-operation." The system may break down disastrously at any moment.

As for the Region's lone public health district, it did not result in any union of municipalities, but merely in a higher tax rate for the city of Berwyn. And the mosquito abatement districts further complicate the situation. At best such districts are makeshifts, and the efforts of the states to solve the regional health problem in this way have not met with success. In a word, the entire governmental machine, with its 330 separate and distinct local districts and its numerous *ad hoc* districts superimposed to perform special functions, is ineffective when faced with the problem of metropolitan health protection, and will remain so until fundamentally altered.

VII. REGIONALIZATION OF HEALTH CONTROL IS NECESSARY

Regional unity in matters of public health is evident only in common needs and common interests; there is little unity of governmental action. The need for such unity must be evident, but in case it is not a few of the many advantages to be obtained thereby are here reviewed. If vital statistics for the Region are to mean

anything or to be of any local use they must be collected, sorted, and interpreted on a regional basis. The increasing hospitalization of cases makes the statistics now gravely collected and published for each of the 214 smaller registration districts more and more misleading. Thus the State Health Department reports that in 1926 there were 522 births in Cicero and 2,531 in Oak Park; whereas the 1920 federal census showed that there were 8,053 children under seven years of age in Cicero as compared with 4,618 in Oak Park. The same factor of hospitalization upsets all death-rates computed for individual municipalities of the Region. Chicago obviates this difficulty within its borders by allocation of births and deaths to wards of residence, and this same method of allocation should be applied to the entire metropolitan area.

Contagion is said to sweep out toward the suburbs in ever widening circles from Chicago, and with 95 municipalities clustered in a solid block about the central city the need for co-operation in information and all control measures is apparent. There is now an effort on foot to link up the various jurisdictions in this block with a common information service, indicating the degree of prevalence of each contagious disease week by week in a mimeographed circular to be distributed among the health departments concerned. But this depends wholly on voluntary co-operation, and since most of the 95 health officers are part-time personnel with only a minor interest in public health, the effort cannot meet with wide success. Even if it did it is merely a palliative, for it only indicates existence of cases and does not assure the application of careful control measures.

Other instances are found in tuberculosis and vene-

real-disease control. In 1923 and 1924 the Chicago Municipal Tuberculosis Sanitarium reported 15,000 cases which "did not return," "were not found," or "left the city." Thousands of these persons were still undoubtedly within the Region, living out of reach of the Sanitarium's authority in suburbs or in hiding in the city itself. If responsibility as well as authority were centralized on a regional basis, this game of hide and seek would be much more difficult to play. Similarly, the difficulty of controlling prostitution in the Region would be much lessened with the unification of the 330 separate control units under a single head. The roadhouses which now flourish in the "rural" areas, outside all municipal restraint, could be brought under reasonable control. As matters now stand it is utterly impossible for Chicago to control venereal disease within its borders no matter how much effort it applies, for these foci of infection are to be found in every direction a few miles beyond the city limits.

Nor may these problems be solved through drastic action by each of the four states acting separately. Public health problems in this metropolitan area are unique, and rural-minded legislators cannot be expected to appreciate or sympathize with the urban point of view. Safeguarding food and milk supplies, keeping down contagion, wiping out tuberculosis in slum environments, protection of water supplies from gross pollution, are primarily urban problems, or at least have a distinctly urban slant. In smaller cities single action by the municipality will be enough in most cases, but where the municipalities are so close to each other and their populations so intertwined socially and economically, single

action is insufficient. The alternative to union is a higher death-rate.

One of the most striking aspects of the present chaos is the absence of initiative, of a planned program on the part of most regional health agencies. When new activities are taken over by health departments the pressure for so doing usually comes from private individuals or organizations. Often these agencies have to begin the new function themselves and demonstrate its value thoroughly before public authorities may be prevailed upon to accept responsibility for including it in the budget. An alert government should see ahead and be constantly seeking to promote the public health by affirmative effort, but actually few regional departments (notably Chicago, Kenosha, Winnetka, Evanston, Berwyn) canvass the possibilities of expansion with any degree of attention. Most of them fail to act until forced to do so. Regionalization of the health program would permit the direction and planning of a program by persons with time and interest to devote to the problem, and would provide balance and proportion for the work.

VIII. EFFICIENCY AND SECURITY DEMAND CO-ORDINATION OF MANY HEALTH SERVICES AND FUNCTIONS ON A REGIONAL BASIS

This follows directly upon what has been said immediately above, but it may be well to point out specific cases where co-ordination would result in greatly improved administration. It should be perfectly clear that consolidation of the 215 separate vital-statistics registration districts of the area into a much smaller number would result in economy and better service; and it has been sufficiently demonstrated that the collection should

be on a regional basis because that is the natural hospitalization area, and the natural health administration unit. It is just as clear that establishment of the Region as the unit of popular health education is feasible and desirable, as shown by regional newspaper circulation and other factors. The values of co-ordination of all such health services as clinics, laboratories, inspection services, nursing organization, and hospitals are also apparent, and are so important that special attention is hereby called to them.

An excellent illustration of this thesis is the regional laboratory system. The values of the change we suggest are two: for many types of test a large laboratory is far more efficient than a small one; and it is important that the laboratory be located near at hand. Under present conditions there are in the Region the Chicago laboratory, a Wisconsin state branch laboratory at Kenosha, an Illinois state branch laboratory at Chicago, and numerous municipal laboratories scattered throughout the Region. The Chicago laboratory makes so many Wassermann tests for syphilis, for example, that the unit cost is between $0.05 and $0.10, whereas the smaller laboratories cannot make these tests for less than $1.00 to $2.00 each, for it costs but little more to make a dozen tests than one. While differences are not so great in many types of tests, they are considerable in most cases. Chicago makes over 300,000 tests per year at a cost of less than $150,000, covering both routine and special research, while in most regional laboratories unit costs are much more. In 1926 it cost Aurora $5,500 for 2,468 tests; Oak Park, $2,100 for 768; while the labor alone cost Evanston $1,700 for 2,645 tests, $2,800 for 6,600 tests at Kenosha; and the East Chicago laboratory

costs $6,000 per year. The Illinois state branch laboratory located at Chicago made only 800 tests in 1926. The state laboratories make thousands of tests—100,000 at Springfield, 87,000 at Indianapolis, and 250,000 in the Michigan laboratories—but these laboratories are so far from the Region that much of their usefulness disappears. Certain types of examination are required to be made in these state laboratories, which places an additional burden of inconvenience on the regional communities. Many jurisdictions have no laboratory facilities of their own, and struggle along from year to year without making tests which are essential. If the Region were under unified control the Chicago laboratory might be made a central laboratory, dealing with all cases which could be handled there, and if it were desired to maintain local laboratories at strategic locations in the Region they might be created as branches. Or, it might be preferable to establish a number of collecting stations for samples, which might be rushed to the central laboratory each day and the results reported by telephone. There seems to be no question but that the results would include extension of an efficient laboratory service to every portion of the Region, a reduction in unit costs, and greater speed.

The same cogent arguments apply to the extension of clinical services over the Region, whether tuberculosis, venereal disease, infant, maternity, preschool, dental, cardiac, and others. By providing a unified system of stations the same physicians and technicians and nurses might have a definitely scheduled itinerary throughout the Region, with districts determined by density and types of population, and by the degree of interest shown. The Chicago infant clinics might be combined with

those of the Cook County Health Department and the Chicago Tuberculosis Institute, those of the Du Page County organization, and of other local cities and villages throughout the area in a giant chain system. Many types of clinic might be held in the same offices, and a number of local community health centers established, with a consequent saving in unit costs.

Identical arguments apply to tuberculosis sanitariums and contagious-disease hospitals. If organized on a regional basis, all parts of the Region would share in the benefits and in the costs of hospitalization. Naturally cities and villages of from 2,000 to 30,000 population cannot afford specialized hospitals on any considerable scale, or on any scale at all, for that matter; and better service might be obtained at a lower rate through regional co-operation. There might be large central hospitals, and supplementary concentration points at various places in the area. The "spheres of influence" of central and subhospitals would be flexible, easy to suit to the exigencies of population shifts, types of disease, epidemic conditions, or any changing circumstance which might arise; and everyone in the Region would have access to hospital care while hundreds of jurisdictions now have no facilities.

Regional inspection services have been suggested in almost every connection throughout this study. Yet, to summarize, centralization in this field might profitably occur in respect to school-sanitation inspection, dairy-farm inspection, pasteurization-plant control, quarantine officers, food inspectors, slaughter-house inspection, nuisance abatement, housing inspection, smoke abatement, etc. Chicago's Bureau of Inspection, with a total personnel of 100 persons, might very readily be intrusted

with responsibility for the entire Region, and a much higher standard of service be obtained for less than the present per unit cost. For instance, the very excellent Chicago system of dairy-farm inspection costs the city $0.0003 for each quart of milk consumed in the city, and would be materially reduced if the service were extended over the Region because of lower overhead. The same methods of standardization and centralization apply to the field of nursing service—a field where there is as yet little co-ordination or centralized direction.

To conclude, then, we have found Chicago far superior to the remainder of the Region in practically every phase of public health work; we have found the states acting as more or less artificial intermediaries between Chicago and the rest of the Region and the federal government, and sometimes showing actual hostility to regional interests as well as passive neglect; we have found that the system of establishing *ad hoc* agencies to solve special problems has its drawbacks, to put the situation in its most favorable light; and, finally, we have found that regional co-ordination of services and functions is highly desirable.

The advantages of amalgamation are plain in every one of the health services. The deeper the analysis the surer the conviction that regional control is essential to the most effective development of the health program. The larger area and the resources that go with it are not only productive of initiative and energy in the directive phase, but they permit more efficient organization of men and materials. Popular understanding of the possibilities that lie in regional consolidation of services and functions could not fail to produce strong sentiment in favor of such a plan.

CHAPTER XIV

WHAT TO DO? SOME ALTERNATIVES

It should be stated at the outset that the recommendations and suggestions herein contained are based solely upon the data obtained in this study of the public health situation. Other studies of the Chicago Region are now in progress, and their results may suggest changes of a different nature. What is said here is designed merely to improve public health protection, without regard to other important governmental functions. Moreover, no one who has discussed the matter with any large number of regional health officers could fail to realize that a suggestion of any fundamental alteration in existing public health machinery will be considered "visionary" and "theoretical." It is for this very reason that such suggestions are extremely important, for while numerous valid objections may be offered to any proposed change the various possibilities should be thoroughly canvassed. Popular interest in and understanding of "theory" is the first step in a "practical" course of action.

I. VOLUNTARY CO-OPERATION BETWEEN GOVERNMENTS MIGHT BE EXTENDED

When this study was begun it was thought that investigation might show that the seeming chaos of health agencies at work in the Region was mitigated quite considerably by voluntary co-operation among them. Actually, the extent of such co-ordination was found to be slight. Where it does exist the federal government,

lacking absolute authority to enforce its program, is usually the prime mover. Illustrations of this are the federal printing of popular-health-education pamphlets for state or local distribution, suggestions and subsidies to state and local agencies for improved control of venereal disease, and the arrangement whereby the federal inspectors cover processing of foods while state inspectors watch especially for fraud and Chicago inspectors cover retail establishments.

Ordinarily, co-operation between the Illinois state department and that of Chicago consists in allowing the city department to cover its own area unaided while the state department works entirely outside. In the same way, co-operation between the Cook County department and that of Chicago, and of the state as well, consists of the same allotment of areas of control. Co-operation between municipalities, even between jurisdictions separated only by a built-up street, is rare even in such an elementary field as control of communicable diseases.

Sometimes school districts and health departments of cities or villages do co-operate in school health work, but usually again only by allocation of function. Even when there is closer co-operation results are sometimes unfortunate, as in the case of the Chicago Municipal Tuberculosis Sanitarium's sudden dropping of its work in medical examination of Chicago school children. We have already noted the improbability of great success attending the recent effort to draw the cities closer together by interchange of current statistics of contagious-disease incidence; and the difficulty of obtaining co-operation on any controversial matter is illustrated in the long-drawn-out and unsuccessful efforts to solve the sewage-disposal problem in the Calumet area.

Nevertheless, this method of regionalization should be further explored. One great advantage is that no legal authority would be required to put it in motion; and while the difficulties in the way of its success are shown in the 330 separate local health authorities in the Region, mostly manned by part-time officers little interested in public health, any step in this direction would be an improvement over present conditions. Real benefit would come from a regional health conference attended only by health officers from the larger regional jurisdictions—say counties and such municipalities as have over 10,000 population. This conference might meet at regular intervals of a month, or a quarter, or even a year, gathering at the various cities of the Region in rotation, and a discussion of common interests and problems could not fail to be profitable to the entire area.

II. THE SITUATION COULD BE MATERIALLY IMPROVED BY STATE LEGISLATION

Many of the present evils could be eliminated, or ameliorated at least, without action on a regional basis. The 330 local jurisdictions might be reduced sharply in number, and health-administration areas large enough to support a specialized staff might be set up. For such a plan to be fully effective the area outside Chicago would have to be consolidated into 10 or 20 units, with populations of from 50,000 to 200,000 residing in each district. These districts might even follow present county lines if necessary, although as now drawn these boundaries do not conform to natural limits of health administration in most cases. But at the very least the smallest local government units might have their health functions removed and placed in the hands of county, or

health district, officers, and if necessary the municipalities with 10,000 population or more which so desired might retain autonomous local health departments. This system is already partly in force in Indiana, where township officers retain no health functions, the objection to its present operation there being that the smaller municipalities retain autonomy while the various county organizations are still too small to permit of public health organization on a professional scale.

This suggestion is advanced with some misgivings, for about the last thing which could be reasonably recommended on the basis of past experience would be the creation of new *ad hoc* districts to solve the health problem. Unless there is to be a general reorganization of units of local government in the Region, which would permit of local health districts coinciding with other units of local administration, erection of county health departments with plenary powers would be preferable. The counties are the largest present unit of local government, and consolidation of public health work on a state-wide basis would be unthinkable in the light of past neglect of regional conditions by the Springfield and Indianapolis authorities.

Instead of suggesting new special districts, we believe the evidence obtained in this study rather points to abolition of many of the *ad hoc* agencies now in operation, and consolidation of their functions in the hands of the standard units of local government. This is strikingly true in the case of the City of Chicago Municipal Tuberculosis Sanitarium, every function of which might be properly executed by the Chicago Health Department. It is also true of several of the smaller sanitary districts, whose functions could usually be carried out as

well by city authorities; and the county tuberculosis sanitariums might very properly be placed under the control of county health departments. Aside from the advantage of the special tax rate there seems to be no advantage in having public health administered in the city of Berwyn by the Public Health District rather than by a City Health Department. When tax limits stand in the way of local governments adopting new but necessary functions, it is much less costly to raise the tax limit than to establish a special agency with the right to levy a special tax in addition to the standard rate.

We should also note at this point that a reduction in the number of local health agencies throughout the Region would permit a much larger degree of the voluntary co-operation suggested above. It is much simpler, and usually more profitable as well, to call a meeting of 20 persons to consider a subject in which all are primarily interested as professional people than to call a meeting of 330 assorted professional public health workers, part-time physicians from small villages, and township supervisors. Co-operation in special emergencies would also be much simpler.

III. A REGIONAL HEALTH AUTHORITY MIGHT BE ESTABLISHED BY INTERSTATE COMPACT

If any *ad hoc* health agency is established in solution of common problems of the Region, it should include the entire Region, it should absorb all present health functions of the smaller jurisdictions, and it should have plenary supervisory authority at least over the largest autonomous health departments (if, indeed, any such were retained). The nearest approach to what we have in mind now in operation in this country is the Port of

New York Authority, created by "treaty" or interstate compact between New York and New Jersey. Established in 1921, the Authority is governed by 6 commissioners, 3 appointed by the governor of each state, and its jurisdiction extends over those portions of New York and New Jersey most closely connected with the New York metropolitan area. Its principal function to date has been the erection of four interstate bridges, two of which are now in operation. The main financing of these projects has been in the form of bond issues, of which $46,000,000 had been floated up to December 31, 1928; but overhead costs are defrayed by equal contributions on the parts of the two states, each appropriating $100,000 or $150,000 per year for this purpose. The engineering projects undertaken are very remarkable, including the Hudson River bridge now under construction at an estimated cost of from $50,000,000 to $60,000,000. The administrative activities of the Authority have received high praise.

Another agreement between states with a greater health significance is that between Missouri and Kansas in respect to regulation of the waterworks of Kansas City, Kansas, and Kansas City, Missouri. And still more directly in point is the unsuccessful effort of the states of New York, New Jersey, and Pennsylvania to arrive at an agreement concerning the development and diversion of the waters of the Delaware River, with the hope of placing control of sewage disposal and maintenance of forest cover in the hands of a supervising joint administrative agency.[1] There is one case at least

[1] Art. I, sec. 10, of the federal Constitution requires the consent of Congress before such compacts become effective. The best discussion of the compact clause and activities under it is that by Felix Frankfurter and James M. Landis, "The Compact Clause of the Constitution—a study in Interstate Adjustments," *Yale Law Journal*, XXXIV, 685–758.

where the states of Illinois and Indiana have attempted to solve a common problem by this means, for in 1921 they established an interstate harbor commission to consider the feasibility of developing Wolf Lake as a harbor, but no agreement was reached.

To accomplish any real and lasting gain a Chicago regional health authority would have to be granted much more power than that wielded by the Port of New York Authority, or any other such body yet established or even seriously considered. If its costs were to be equitably distributed over the area benefited they would have to be raised by direct taxation. Unless this power were granted, the agency created could be nothing more than an advisory body with no authority to enforce its recommendations. Preferably the authority would have complete health jurisdiction: to collect and interpret and apply mortality and morbidity statistics; to quarantine, to immunize, to hospitalize contagion; to take drastic measures against tuberculosis and venereal disease; to establish systems of clinics, laboratories, nursing, and inspection services; to exercise local control over food and milk supplies; to carry out comprehensive programs of popular health education; in a word, to wield plenary power in all primary public health functions.

It has been very difficult to obtain consent of states in the past to any such agreement of an important nature, as witnessed by the failure of the much-heralded and much-discussed Colorado River compact. Yet the necessity for establishing some new unit of control in the case of such pressing common needs, not properly cared for in the hands of any agency now existent, must be obvious. The point is well stated by Frankfurter and

Landis, and while they were discussing somewhat larger areas the thought applies to the Chicago Region with equal if not greater force.

> Legislation is the answer, and legislation must be coterminous with the region requiring control. We are dealing with regions, like the Southwest clustering about the Colorado River, or the states dependent on the Delaware for water, which are organic units in the light of a common human need like water-supply. The regions are less than the nation and are greater than any one State. The mechanism of legislation must therefore be greater than that at the disposal of a single State. National action is the ready alternative. But national action is either unavailable or excessive. . . . . With all our unifying processes nothing is clearer than that in the United States are being built up regional interests, regional cultures and regional interdependencies. These produce regional problems calling for regional solutions. Control by the nation would be ill-conceived and intrusive. . . . . Regional interests, regional wisdom and regional pride must be looked to for solutions.[1]

Whatever the legal and political obstacles in the way of this solution, it cannot be neglected in outlining proposed courses of constructive action. And, as stated previously, if popular interest is aroused to demand such a change these obstacles lose much of their importance, and a solution which seemed theoretical at first blush becomes intensely practical.

IV. REGIONAL CHICAGO MIGHT BECOME THE FORTY-NINTH STATE

Pending the completion of numerous other studies of the Chicago Region now under way little can be said on this point. However, as far as public health control may go, this solution seems the most desirable of all. It would permit early solution of the Calumet sewage problem; a thorough reorganization of local areas of ad-

[1] *Ibid.*, pp. 707–8.

ministration upon natural rather than artificial lines; it would permit organization of health services so that everyone in this social and economic unit could benefit, and pay his share; and the states would no longer intervene between the beneficial influence of the federal government and the Region, diverting federal aid to rural districts. Chicago caused a brief ripple of interest and amusement three or four years ago when, chafing at some specially irritating bit of state interference in local affairs, the city demanded investigation of the possibilities of separate statehood; but the proposition is worthy of serious study, especially when the regional hinterland is included in the project. However, this is not the place to put forth a brief in this regard.

V. WE MIGHT GO ON AS WE ARE

In advancing objections to proposed alterations to the existing system on the ground of "impracticability," let us not for one moment forget the situation in which we now find ourselves. No conceivable governmental system for safeguarding the health of the regional population could be much worse than that under which we live, with 330 local health authorities shifting responsibility or in open conflict with one another, selfishly injuring health in neighboring jurisdictions; with numerous special agencies carrying on their work in the shadows cast by a complicated machinery of government; with 101 separate state and federal agencies supervising (in theory) the operations of the smaller governments.

Under present conditions, the normal expectation for the future is an increasingly confused jungle of local governments. The municipalities increase in number

throughout the Region at an average rate of two or three per year; at least one or two new *ad hoc* agencies may be anticipated per annum; and a larger and ever larger proportion of the metropolitan population will be living in the suburban and "rural" areas, subjected to the extra health hazards revealed in this study. One mitigating circumstance is the growth of some of the larger suburbs to the point where they can afford professional staffs of public health officers; but far outweighing this is the probability of creation of more and newer types of special agencies. Dog districts to check rabies, or rat and flea districts to keep out bubonic plague, are more likely to increase tax rates than to result in any permanent improvement in public health control. The metropolitan community which is Chicago may well take stock of the present situation, consider the inevitable results of inaction, and plan an affirmative program of health control and disease prevention. The alternative to union lies in higher death-rates.

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